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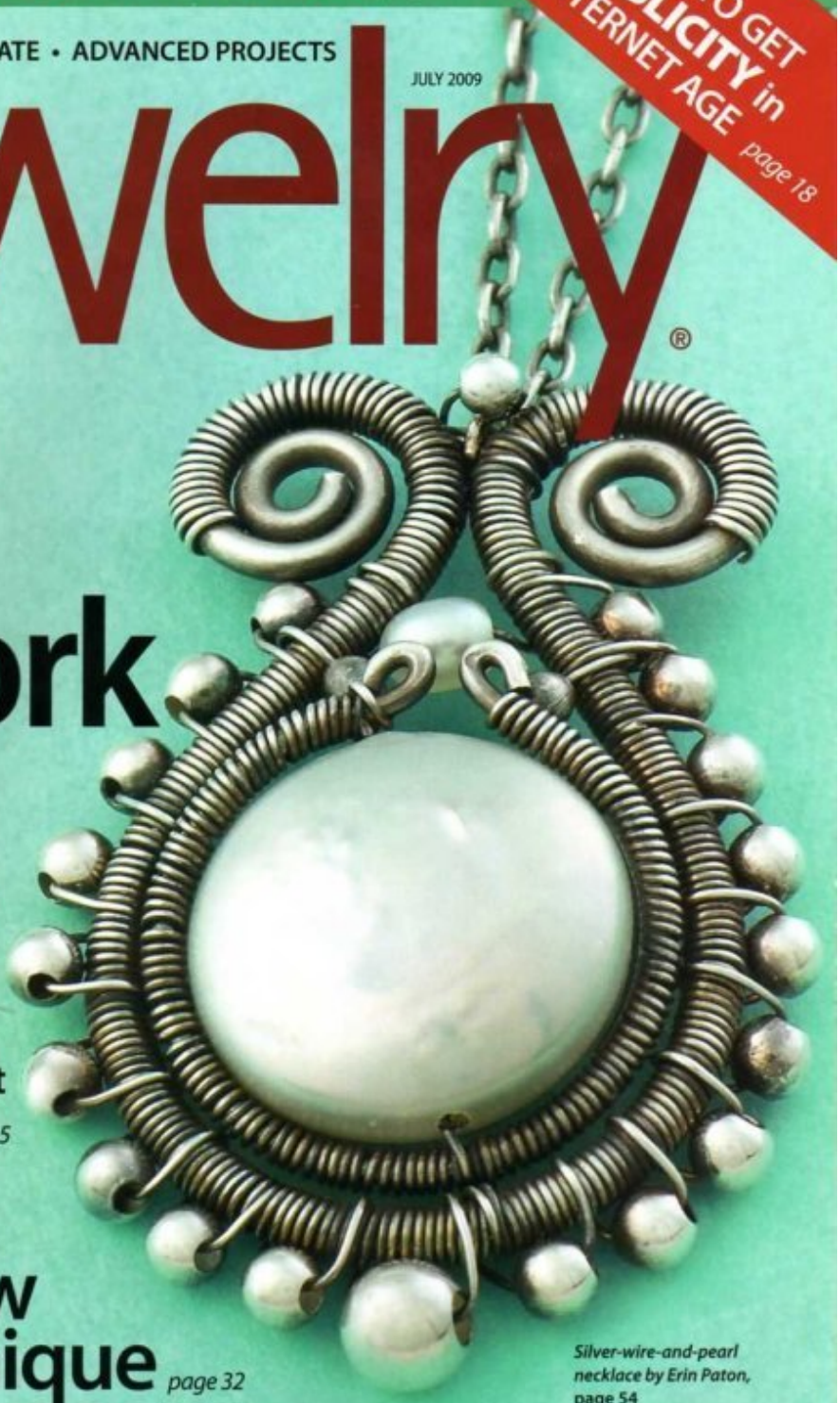

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WIRE

Wirework Hook Clasp

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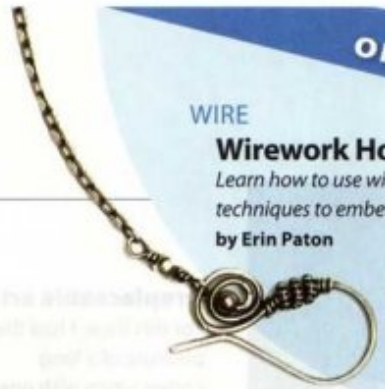

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Irreplaceable art

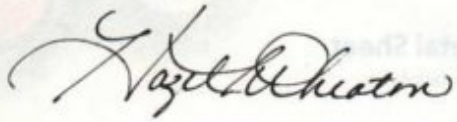
For this issue, I had the pleasure of a long conversation with one of my jewelry-making heroes, Judith Kinghorn. I've admired her work for years, and talking to her about her inspiration and her processes was — well, it was a lot of fun for me. (See "A Conversation with Judith Kinghorn," *page 42*.)

The current economic climate is worrying for all jewelry makers, understandably. I asked Kinghorn, how do you ask people to buy what is, frankly, a nonessential item when they're carefully counting every dollar they spend? Economic uncertainty doesn't lend itself to extravagant expenditures on adornment.

Art offers something personal that connects with its buyer — a bad economy won't change that.

Kinghorn's response reminded me of one of the reasons that jewelry makers — and all makers of handmade objects, wearable or not — can be hopeful: Art offers something personal that connects with its buyer — a bad economy won't change that. Buyers may be cutting back on the *number* of pieces they buy, but that means they're putting more thought and attention into the pieces that they *do* buy, which leaves a nice space for artisans who design and make jewelry.

And on the side of the maker, whether professional or hobbyist, it's encouraging to remember that historically, hard economic times have given rise to some of the most creative work. Maybe you'll choose different, less costly materials to work with or figure out a way to use bits and pieces you've stockpiled in the past. Uncertain times mean that artists, along with the rest of us, have to step out of their comfort zones. And for an artist, that can mean new directions, new ideas, and exciting new work.



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about our artists & writers

Where do you go for a critique of your work?

"I've always been fortunate to have wonderful editors who give me excellent feedback on my articles and books. As long as it improves the work (which makes me look good), I'm always grateful for their help. Critique groups can be a great place to share work, as long as everyone is invested in each other's success."
—Sharon Elaine Thompson
"Take Care of Your Most Important Tools," *page 27*
Contact: editor@artjewelrymag.com

"I am lucky to have a few other artist friends who offer honest critiques of my work. I like to get a broad range of feedback. I try to stay away from asking for critiques from friends and family and instead look to the galleries I work with and other artists and collectors for the most meaningful feedback."
—Angela Gerhard
"Scribble into Enamels — Sgraffito Revealed!" *page 32*
Contact: www.angelagerhard.com

"Potential mentors come from more places than you might expect. Teachers and artists you respect and admire are the first source that comes to mind, but you can also get great feedback from artists in other, unrelated fields. Sometimes a critical eye from outside your usual community can provide incredible insight and objectivity."
—Pam East
"When Good Enameling Goes Bad," *page 39*
Contact: www.pameast.net

"I have a Web site and a good number of wholesale customers. These customers are very open about what they like about my pieces and what they feel their customers would prefer."
—Leanne Elliott Soden
"Whip Up Latch-Back Earrings in 30 Minutes or Less," *page 50*
Contact: leannesoden@comcast.net

"Most of my Etsy customers leave me feedback and I also receive e-mails from satisfied customers, which makes my day. My 'cyber' family of artisan friends on Etsy and at the Wire Artisans Guild are always there for support, help, and honesty! Responses from wire artisans mean a great deal to me, because they know the time and effort that goes into a piece of jewelry."
—Erin Paton
"Learn Secrets of Masterful Wire wrapping," *page 54*
Contact: www.earringsbyerin.etsy.com

"The best feedback comes from my collectors and my students. They bring different perspectives and see elements in my work that I'm often too close to realize."
—Victoria Lansford
"Weave a Simple, Solder-Free Cuff," *page 61*
Contact: www.victorialansford.com

"Feedback is very important to me. For a critique, I go to my students — I've learned how to interpret their reactions!"
— Hadar Jacobson
"Mix it Up — Metal Clay Meets Metal Sheet," *page 65*
Contact: www.artinsilver.com

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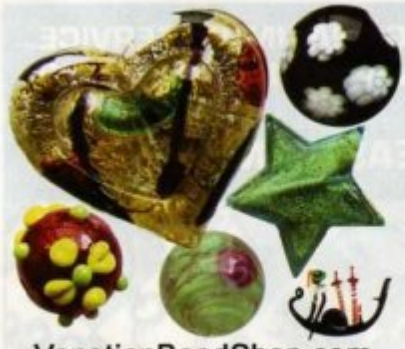
For our guidelines, go to ***www.artjewelrymag.com/submit.***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reader forum

Our readers share their thoughts, tips, and questions.

▲ **Students in The Design Department, Merchant Taylors' Boys School in Liverpool made these enamel pieces.**

Class is in session

Our article "How to Make High School Metals Programs Work" (March 2009) prompted this letter from a teacher in the United Kingdom:

Last year I suggested to my Head of Department that we change our usual Year 10 project for our GCSE Design and Technology students. I had always wanted to get the boys to make some jewellery. So, after 23 years doing what I should, I shared with my two classes of 14-year-olds what I really like doing.

All the boys made an enamel piece to a standard size but were allowed free reign to experiment with the application of the enamel powders. Some added gold or silver leaf to the finished enamels. The supports were made from a variety of materials, including copper, tin, and aluminium sheet and gilding metal. The patterns were applied using a rolling mill. Many of the boys made their own clasps to finish off. A lot of emphasis was placed on doing some simple techniques to a good standard. It was busy and tiring but a lot of fun.

—Tilly Wilkinson
Merchant Taylors' Boys School
Crosby, Liverpool, U.K.

Photography advice?

I love reading *Art Jewelry*, as it has given me some wonderful inspiration over

tell us what you think!

Let us know what you liked — or didn't like — about an issue, or what you'd like to see in future issues, by taking our online surveys at **www.artjewelrymag.com.**

Send your questions, comments, and tips via e-mail to editor@artjewelrymag.com. Letters are edited for clarity and length.

the past year, but recently the business articles have given me food for thought. There have been some brilliant pieces about promoting your work, but one thing has disgruntled me a little. Each article has said how important it is to have quality photographs of your work. This is all well and good if you can afford to hire a professional photographer, but what about the rest of us? It would be nice if you could offer suggestions about DIY photos — best lighting, background, etc. — to show our work to its best.

—Caroline Paine
Maidstone, Kent, U.K.

Tip: Making bezel paper curl

Neophyte that I am, I would be surprised if someone else hasn't come upon this years ago. But as I mucked about fitting a round bezel with a piece of paper to measure, I realized that the paper, being paper, resisted easy fitting due to its natural springiness. So I thought to first wrap the paper tightly around a dowel that is much smaller than the stone so that the paper retains the shape of the dowel. Then, when I slide the paper onto the stone, it expands with the curvature of the stone and retains a tighter fit around the stone without having to be held in place. I hope that this helps others who are as clumsy as I usually tend to be!

—Pat Rogers
Allentown, Pa.

Thanks for Gordon!

I was delighted to read the interview with Gordon Uyehara in the latest issue. I have had the great pleasure of taking his beginning Art Clay class at our local Bead It! store. Those three hours with him helped open a creative side of me that I frankly didn't know I had. I may never be as good as Gordon is, but thanks to him, I believe I really can create beautiful art jewelry.

—Pat Hurley
Honolulu, Hawaii

Can we see the back?

When possible, it would nice to see pictures of different angles of jewelry in projects, Gallery, the artist profile, etc. It's always great to see the front or top view; however, the back and bottom view, and even side views, help seeing applied techniques. Thank you.

—Cheryl Doane
Costa Mesa, Calif.

in our inbox

Jan Raven sent us a photo, *right,* of pieces that she made after reading Sharilyn Miller's "Put Your Embellishments to Work" in our March 2009 issue. **Melissa Muir** sent us a photo, *below,* of a piece that she made incorporating the chain technique that Marie Cristine Knuff shared in "Forge an Easy Chain" (November 2008).

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January 31 - February 13

Holiday Inn-Palo Verde/Holidome
February 5 - February 13

Quality Inn on Grant Road
January 31 - February 13

Detroit, MI.....March 27-28-29
Minneapolis, MN.....April 5-6
West Springfield, MA.....April 24-25
Orlando, FL.....May 1-2-3
Franklin, NC.....May 8-9-10
Las Vegas, NV.....May 29-30-31
Detroit, MI.....July 10-11-12
Franklin, NC.....July 23-24-25-26
Spruce Pine, NC.....July 30- 31-August 1-2
Tucson, AZ.....September 10-11-12-13
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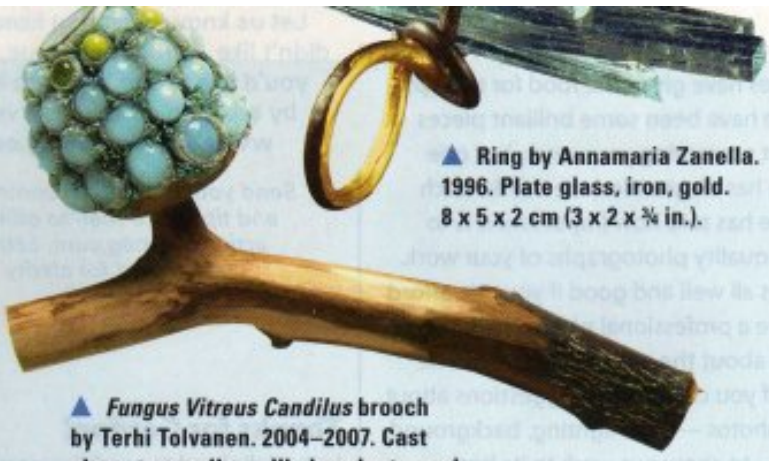
exhibits

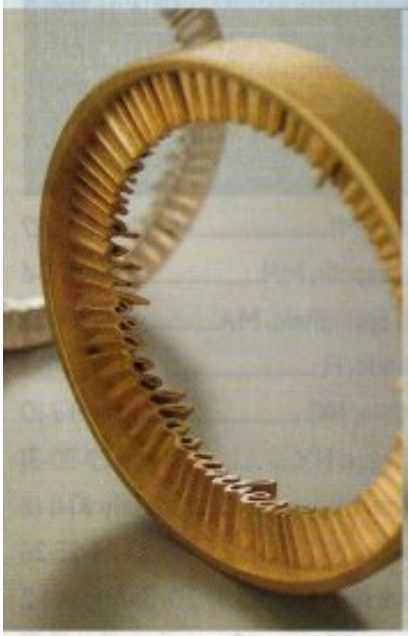
exhibit: *GlassWear*

What: The exhibit showcases more than 120 contemporary jewelry pieces that incorporate glass elements in their design. From understated to theatrical, the work represents a range of aesthetics from both emerging and established artists.
When: July 15–September 20, 2009
Where: Museum of Arts and Design, New York
For more information: www.madmuseum.org



▲ **Ring by Annamaria Zanella. 1996. Plate glass, iron, gold. 8 x 5 x 2 cm (3 x 2 x ¾ in.).**

▲ ***Fungus Vitreus Candilus*** **brooch by Terhi Tolvanen. 2004–2007. Cast glass, tourmaline, silk, hazelnut wood, grape wood. 12 x 5.5 x 3.5 cm (4¾ x 2¼ x 1¼ in.).**
Photos courtesy of Museum of Arts and Design.



◄ ***Like Your Voice*** **bracelet by Kyeok Kim. 2007. Gold-plated silver.**

▼ ***Relation*** **brooch by Hwa Jin Kim. Sterling silver, 18k gold. 50 x 40 x 6 mm (2 x 1⅝ x ¼ in.).**
Photos courtesy of Fuller Craft Museum.

exhibit: *The Sixth Sense: Contemporary Jewelry from Korea*

What: Curated by Kiwon Wang and organized by the Fuller Craft Museum, the exhibit highlights work by contemporary Korean jewelry artists. The collection provides an intimate glimpse into the spiritual and aesthetic elements of Korean jewelry.
When: Now–July 26, 2009
Where: Fuller Craft Museum, Brockton, Mass.
For more information: www.fullercraft.org

show

show: Sandra Enterline: Interiors Revealed

What: Enterline makes studio jewelry in oxidized silver and gold. Her hollow forms are hand drilled with tiny perforations.
When: July 3–August 2, 2009
Where: Patina Gallery, Santa Fe, N.M.
For more information: www.patina-gallery.com

► ***Shield Necklace*** **by Sandra Enterline. Oxidized sterling silver, 22k gold, stainless steel. 2009. 4 x 1½ x ½ in. (10.2 x 3.8 x 1.3 cm).**

► ***Window Brooch*** **by Sandra Enterline. Oxidized sterling silver, 14k white gold, diamond slices. 2008. 3⅛ x 3⅛ x ⅝ in. (79 x 79 x 16 mm). Photos by Mark Johann.**

conference

conference: Surfacing: The Enamelist Society Conference 2009

What: For the 12th biennial conference of The Enamelist Society, keynote speaker Linda Darty will address the resurgence of enameling in the 21st century. Pre- and post-conference workshops, juried exhibits, a vendor's area, and an educator's forum round out the events.
When: August 7–9, 2009
Where: Oakland, Calif.
For more information:
www.enamelistsociety.org

▼ ***Bibliographic Brooch*** **by Marilyn Zapf. Enamel, sterling silver. 5 x 3 x 3 in. (12.7 x 7.6 x 7.6 cm).** Photo courtesy of The Enamelist Society.

▲ ***Moon Jelly*** **pin/pendant by Amy Lyons. Enamel, 18k and 24k gold, diamonds. 2¼ x 1 x ½ in. (57 x 25.5 x 13 mm).** Photo courtesy of The Enamelist Society.

▶ ***Crystalline Blush*** **brooch by Jessica Kahle. Enamel, mica, 18k gold. 3 x 3½ x ¾ in. (76 x 89 x 19 mm).** Photo by Ken Yanoviak.

workshop

workshop: Zengineering

What: Taught by master metalsmith Andy Cooperman, the workshop focuses on an intuitive way of integrating ideas with metalsmithing processes. Students will explore how to approach jewelry making from a fresh perspective. Topics addressed include cold connections, caging, back setting, and advanced soldering techniques.
When: August 30–September 5, 2009
Where: Haystack Mountain School of Crafts, Deer Isle, Maine
For more information: www.haystack-mtn.org

▶ **The metals and fibers studios at Haystack Mountain School of Crafts in Deer Isle, Maine.** Photo by Amanda Kowalski.

on the web

on the web: hook clasp project

What: Learn how to make a wirework hook clasp to match Erin Paton's project "Learn Secrets of Masterful Wire wrapping" on *page 54* in this issue.
For more information:
www.artjewelrymag.com/projects

Reinventing the press release

Courting the media in the Internet Age

by Marlene Richey

With print newspapers and magazines downsizing and migrating to the Web, the snail mail press release has gone the way of the calling card. Now, establishing a healthy relationship with the media is more of an online dating ritual.

There's no reason to get the jitters around the media. Editors and reporters are won over the same way that your customers are: by your commitment to being professional, informed, prepared, and respectful of their time.

In this column, I'll share do's and don'ts of courting the media. And I'll walk you through how to write a press release that gets noticed, not ignored.

Customize your media list

Think quality, not quantity. Yes, there are a lot of media fish in the sea, but only a select number are a good fit for you and your product. Sending press releases to a generic media list is casting your net way too wide. About all you'll catch is the ire of editors, who on a daily basis empty their inboxes of irrelevant press notices.

- Cull your list to publications that will welcome your news, such as local newspapers, arts and fine-craft magazines, and regional magazines and newspapers near where you're teaching a class, exhibiting your work, or giving a presentation.
- Take time to actually read the publications you intend to send releases to.
- Go online and review each publication's guidelines for submitting both content and images.
- Take note of the publishing cycle so you know how far in advance to send a release. Content that's destined for print magazines will likely have lead times of 4–6 months. Online media outlets turn content around much quicker than print media.

A good picture is worth a thousand words

Jewelry is visual. And the media love photos. But only high-quality images will merit a second look from editors.

- Hire a professional photographer. Taking high-resolution digital images of small, shiny objects is best left to the experts.
- Follow the image-submission guidelines of each publication. For example, if you're directed to use a designated server to upload images, use it (unless an editor has told you otherwise). Large files can clog or crash an e-mail system, and that kind of faux pas will not make you a media darling.
- Add a "press room" to your Web site to post quality downloadable images of your work. Be sure to provide caption details for each image. Editors love it when your press release has a hot link to your press room.

TIP: Every image you post in your press room should be accompanied with the following caption details:

- Your name and Web site address
- Title of the piece
- Year the piece was made
- Materials used
- Dimensions
- Photo credit

Follow up: Be accessible, but don't be a pest

Editors are working under crazy deadlines and don't welcome interruptions. If you feel the urge to follow up with an e-mail after sending a press release, be sure to have a reason. "Did you get my press release?" is *not* a reason. Respect that with shrinking staffs and increasing workloads,

advice from an art-biz coach

A published press release, whether in print or on the Web, is a great way to generate free publicity. The challenge is to get an editor to read your release.

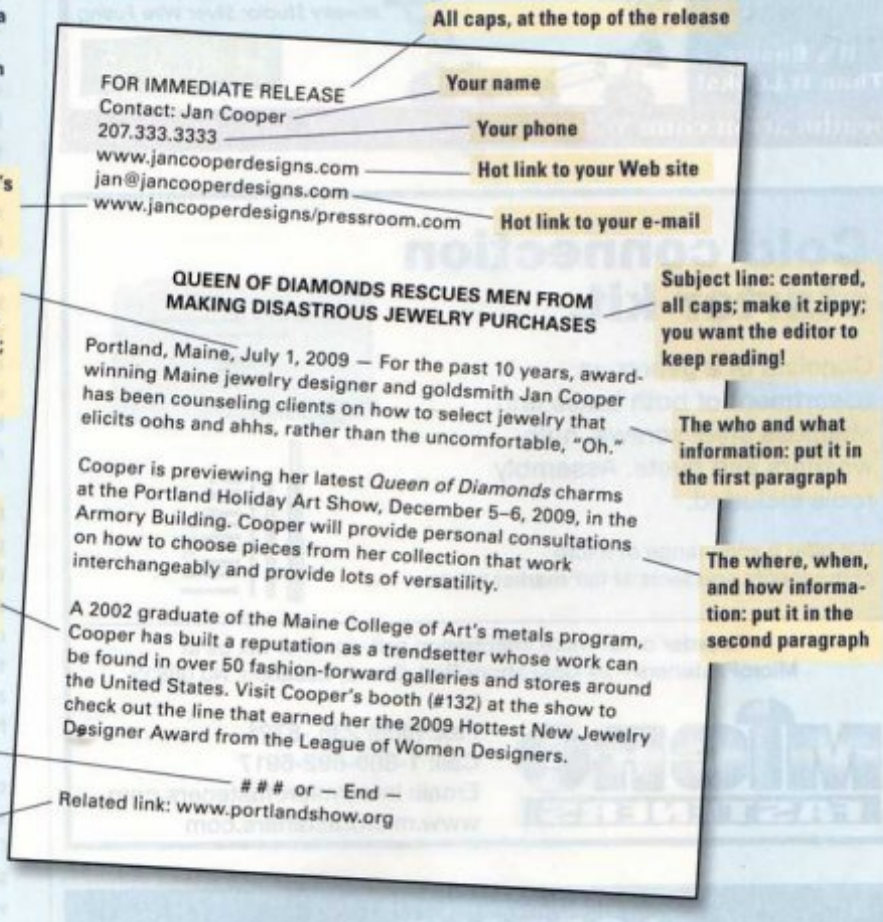
Art-business coach and author Alyson B. Stanfield advises her clients to write an e-mail to the editor that follows a simple rhythm: salutation, pitch, signature, news release.

Stanfield's do's:

- **Use a snappy headline in the subject line of your e-mail**
- **Be sure to spell the editor's name correctly, and get his or her title correct too**
- **Open with a short pitch letter that introduces your press release**
- **Follow the pitch with the actual press release written in plain text and part of the same e-mail**
- **Ask a couple of trusted friends to proofread your release before you send it**

anatomy of a press release

Here's a mock release that follows a typical format. The goal is to put a spin on your release that entices an editor to run it in print or online.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Subject line: centered, all caps; make it zippy; you want the editor to keep reading!
QUEEN OF DIAMONDS RESCUES MEN FROM MAKING DISASTROUS JEWELRY PURCHASES
Date you are sending release; remember, print magazines need 4–6 months advance notice of your event; dailies and Web publications don't need that much lead time
Portland, Maine, July 1, 2009 — For the past 10 years, award-winning Maine jewelry designer and goldsmith Jan Cooper has been counseling clients on how to select jewelry that elicits oohs and ahhs, rather than the uncomfortable, "Oh."
The who and what information: put it in the first paragraph
Cooper is previewing her latest Queen of Diamonds charms at the Portland Holiday Art Show, December 5–6, 2009, in the Armory Building. Cooper will provide personal consultations on how to choose pieces from her collection that work interchangeably and provide lots of versatility.
The where, when, and how information: put it in the second paragraph
Supporting information: keep it in the last paragraph — if it gets cut for space, it's not critical; you can also customize this information to appeal to specific publications
A 2002 graduate of the Maine College of Art's metals program, Cooper has built a reputation as a trendsetter whose work can be found in over 50 fashion-forward galleries and stores around the United States. Visit Cooper's booth (#132) at the show to check out the line that earned her the 2009 Hottest New Jewelry Designer Award from the League of Women Designers.
Indicates end of release
or — End —
Hot link to a relevant Web site; make it easy for editors to report on your event
Related link: www.portlandshow.org

editors usually must operate on the "don't call us, we'll call you" assumption. Don't take it personally; it's not by their choice. Put your energy into being ready when that media contact gets in touch with you for more details about you and your work.

Ride the wave of publicity

After you've succeeded in getting your press release published, be sure to update your Web site with a link to the article. And of course, write a blog entry about your press mention.

Media relations maven Joan Stewart says, "The big advantage to online press releases is that you can use them to pull in lots of traffic to your Web site. Within the release, you use a URL that leads people to a landing page at your Web site that was created specifically for that press release." She adds, "Everyone should be collecting e-mail addresses at their Web site."

Stewart practices what she preaches: Visitors to her site, www.publicityhound.com, get her cheat sheet, "89 Reasons to Write a Press Release," in exchange for sharing their e-mail address. Visitors can also sign up for a free tutorial Stewart created on how to write press releases and distribute them online.

The Internet has made it easier than ever to begin and maintain mutually beneficial relationships with the media. Take advantage of this opportunity to build a reputation as a reliable source for visually rich and interesting content.

suggested reading

***I'd Rather Be in the Studio!: The Artist's No-Excuse Guide to Self-promotion*, by Alyson B. Stanfield. www.idratherbeinthestudio.com.**
To read a review, see *page 23*.

Marlene Richey can be reached via e-mail at marlene.richey@comcast.net.

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Prices vary: $22.00 for a basic stamp; $49.95 for a custom logo

Custom stamps can be cost-prohibitive, but at these prices, any artist can afford to have a signature (or at least initial) stamp of their own. Because these stamps are made of DuPont Delrin, a hard plastic, you can't use them to stamp metal sheet. But you can impress them into metal clay and polymer clay with excellent results. Each tiny letter is laser etched, producing crisp, clear impressions. The depth of the etching is about 1 mm, so you'll get the best results by using a light hand.

For metal clay, I brushed my stamps' faces with a light layer of hand balm prior to use and had no problem with the clay sticking. I found that they stamped best on wet and semi-dry clay. Due to metal clay's shrinkage, the stampings were delightfully tiny after firing; a liver of sulfur patina helped with the contrast.

I also tried the stamps with polymer clay. A spritz of water ensured that the stamps didn't stick to the unbaked clay. (You could dust the stamps with cornstarch instead; instructions are included with the stamps.) I also achieved good-quality impressions by reheating a small area of baked clay with a heat gun, although the indentations weren't as deep as those in unbaked clay. I found that I could press fresh clay of a contrasting color into the stamp recesses of cured polymer and then re-bake it. With a bit of sanding, I created a new look, shown in the blue "AK" bead, *opposite, top right*.

With custom items, attention to detail is key, and I wasn't disappointed when ordering my stamps. Stamp maker Babette Cox worked with me via e-mail to perfect my order. She gave me pointers on selecting the best logo image and then tweaked it to improve its readability. It was fun to select the font for my initials stamp — there were so many choices!

▲ **We ordered three stamps, *above* — a custom image/logo, initials, and a quality mark — and tested them on metal clay, *opposite*, and polymer clay, *top*. U.S. penny shown for scale.**

These custom stamps are available via Cox's Web site, www.babettecox.com. —*AK*

Swanstrom disk cutter set

4 x 4 x 3¼ in.
(10.2 x 10.2 x 8.3 cm)
$250.00

I did one of those inhale whistles when I first learned the cost of this set. But once I started adding up the money I've spent on "value" sets, the price didn't seem unreasonable. I've actually returned a value disk cutter set because I broke it. (I was cutting 20-gauge/0.8 mm soft copper sheet for crying out loud!) With tools, I've come to believe that you usually get what you pay for.

With the Swanstrom disk cutter set, what you get is a high-quality tool. The set is manufactured in the United States entirely from hardened and tempered shock-resistant tool steel. The cutting end of each punch is precision ground and has a polished finish. Especially noteworthy is the slightly angled cutting end of the punches; this feature means that you get crisp, clean cuts.

The design is fantastic. The round upper and lower die plates are spring-loaded. The wrench handle that fits into the center of the plates allows you to easily open and close the dies to accommodate the gauge of metal you are punching.

You can punch soft metals like gold, silver, copper, and brass up to 16 gauge (1.3 mm), using a brass-head mallet to strike the punch. (I used a rawhide mallet for thin gauges of metal.) For 14-gauge (1.6 mm) metal, you can remove the handle and use the disk cutter in a hydraulic press.

The cutter works like a charm. No messing around trying to pry apart die plates. No half-cut metal disks. No disks sliding around between the plates. No disks or punches getting stuck in the die plates — a personal pet peeve. You can even cut crescent shapes with this baby.

Each test I ran had me thinking that the price is justified. We're talking 10 cutters in ⅛-in. (3 mm) increments that make disks ranging from ⅛ in. (3 mm) to 1¼ in. (32 mm) in diameter! Plus, the punches and die plates fit beautifully in a round rubber foot.

To top it off, you get great instructions with sensible tips, like: "To keep the die plates parallel to each other and provide the best die alignment, always place a shim (a piece of metal the same thickness as the metal you're going to punch) on the die plate across from the hole you will be punching." Brilliant.

You're probably not surprised that I strongly recommend this tool, which is available from Rio Grande, 800.545.6566, www.riogrande.com —*JLE*

▶ **The release button on the handle allows the user to reposition the handle, providing adequate clearance to strike the punch.**

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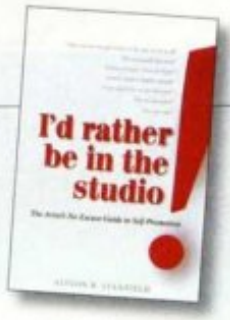


Jewelry Techniques: The Essential Guide to Choosing and Using Materials, Stones, and Settings

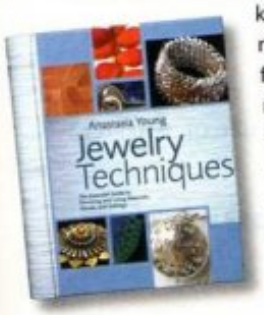
Anastasia Young
Watson-Guptil Publications, 2008
Hardcover, Spiral bound, Full color, 256 pages
$24.95, ISBN: 978-0-8230-2604-3

When I buy something, I actually enjoy reading directions start to finish. I know that I'm in the minority; most people would rather just wing it, or at least skip to the part they're interested in. If you're one of those cut-to-the-chase types, I've found a book you'll love.

This book has over 200 pages of individual techniques. Each technique has its own full-color photo of the finished results and a brief summary of the steps to achieving those results. You can flip through the book to a photo you like, then read the text below it to discover how to replicate it.

This book is not appropriate for beginners; there are no step-by-step photos and the text explaining each technique is covered in a few brief paragraphs. It's geared toward jewelers who already have learned these skills and need a quick refresher.

A few tips and details are skimmed over in some of the short descriptions, but overall this is a comprehensive volume, covering precious, base, and reactive metals, stones, stone setting, wood, plastics, cold connections, leather, rubber, resin, and more. There are even patina recipes, outlines for various etching methods, and a full glossary of terms. The detailed index is particularly helpful in navigating all those pages of information. I could see keeping this book near your bench for inspiration and reference — it'd be perfect for reminding you of a skill you hadn't used in a while. *—AK*



I'd Rather Be in the Studio!: The Artist's No-Excuse Guide to Self-promotion

Alyson B. Stanfield
Pentas Press, 2008
Softcover, 264 pages
$24.95; ISBN 978-0-9742725-8-0

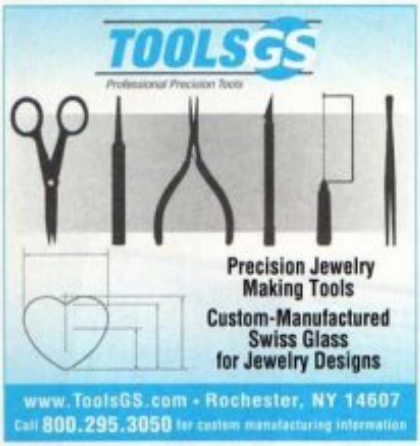
If you're not ready to take control of your own success, this book is not for you. Author and art-business coach Alyson B. Stanfield states that plainly on the book jacket.

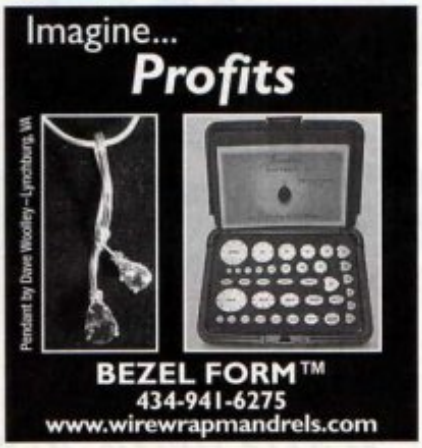
Stanfield's tough love approach is born from her former life as a museum curator and educator tired of hearing artists make excuses for not having thriving careers. Her book debunks the most popular excuses one chapter at a time. Whether it's, "I have no idea where to begin" or "There aren't enough hours in the day to do it all," Stanfield provides a lesson in attitude adjustment and actions to take toward achieving one's personal goals.

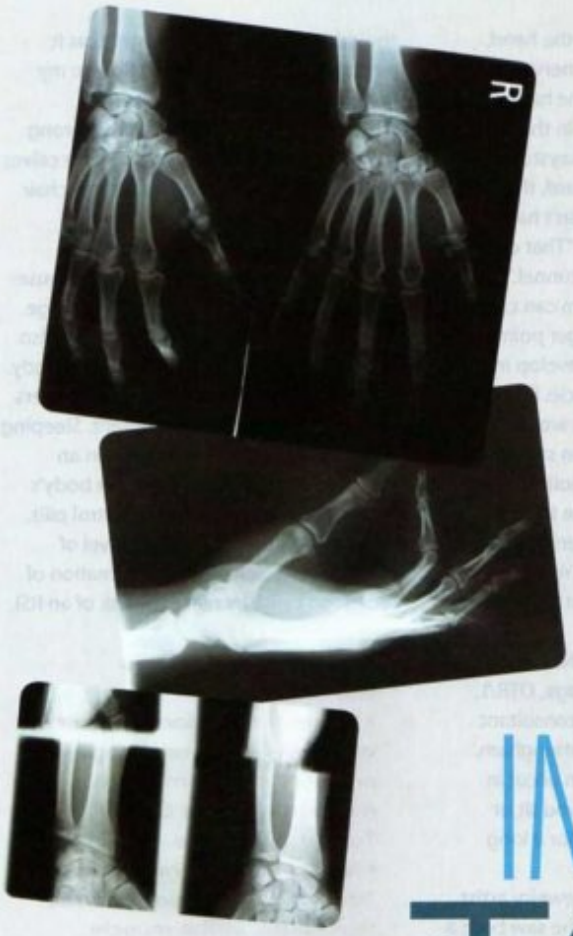
The book is organized so that readers can hop around and read chapters out of order. Even so, Stanfield is careful to point out that certain tasks cannot be skipped, such as defining what success means to you, developing work routines, organizing and maintaining your information, and writing an artist statement.

By breaking each action down into steps and offering real-life anecdotes, Stanfield keeps the content lively. She sprinkles in some coachlike pep talks and explains *why* she wants the reader to follow her advice. For example, if you don't believe that you need to stay on top of current technology, be prepared to learn about the importance of blogging and social networking.

This is an up-to-date guide for the artist who is serious about taking control of the business side of his or her career. If you're still starting sentences with "But...," you're not ready for this book and its Web site, www.idratherbeinthestudio.com. *—JLE*







THE "OUCH!" FACTOR

TAKE CARE OF YOUR MOST IMPORTANT TOOLS

How to prevent and treat repetitive stress injuries.

by Sharon Elaine Thompson

You're working on a big commission that will make your Christmas season. The hours are long, but the money is worth it. Then you wake in the middle of the night with excruciating pain in your hands and wonder if your career is over. While your career might not be over, it may be on hold if you've developed a repetitive stress injury (RSI), such as carpal tunnel, trigger finger, or tendonitis.

What is an RSI?

RSIs have been around since the specialization of work, but began to proliferate during the Industrial Age when workers moved into factories in large numbers and began long hours at repetitive jobs. While metalsmiths might not consider their work dull, Portland, Ore., jewelry artist Kristin Mitsu Shiga isn't surprised that RSIs take a toll. "There's something about the personality of metalsmiths," she says. "We're obsessive-compulsive — always overdoing things."

A repetitive stress injury is just what it sounds like: an injury (usually to hands, wrists, elbows, or shoulders) that results from stressing a joint by doing a task — such as forging, hammering, holding, sawing, drilling, or polishing — over and over and over yet again. When you move into assembly-line mode, you move into high RSI risk. Dr. Cynthia Vaughn, DC, of Austin, Texas, explains it as the difference between tapping your wrist gently on the wall once and tapping it gently on the wall 1,000 times. The first creates no injury; the

second does. Overuse will inflame a tendon, the part of the muscle that anchors the muscle to the bones. The inflamed tendon then swells within its protective sheath and nasty things happen: pain, numbness, and often an inability to work.

☞ **In brief:** A repetitive stress injury results from stressing a joint by repeatedly doing a task. RSIs often affect hands, wrists, elbows, or shoulders.

CTS and other causes of RSI

Carpal Tunnel Syndrome (CTS) is the most well-publicized RSI. The carpal tunnel contains tendons and the median nerve in the wrist, says Dr. Steven Conway, DC, DACBOH, Esq., a national spokesperson for the American Chiropractic Association, who specializes in industrial injuries. Normally, there's enough space in the tunnel, and the tendons can move freely. However, when the tendons swell, pressure bears on the median nerve. The first symptoms are tingling and pain, followed by motor impairment — you drop things and can't pick them up.

But hand pain doesn't necessarily mean you have CTS; the problem may originate elsewhere. The nerve to the hand starts in the neck and passes through the shoulder and elbow before entering the hand. Pressure anywhere on that nerve can trigger tingling or pain in the hand. Also, there are eight bones in the wrist, arrayed like an arch with a keystone. "If the keystone moves backward, the arch collapses and the joint doesn't have as much room," says Conway. "That can put pressure on the carpal tunnel."

Muscle fatigue in the arm can cause pain in the hand when trigger points — tiny contraction knots — develop in the injured or overworked muscle. Blood flow essentially stops in the area around the knots. "The resulting oxygen starvation and accumulation of metabolic-waste products further irritates the trigger point, which responds by sending out pain signals," says Conway. You may not feel pain in the trigger point area but in the hand.

Oxygen deprivation in the muscles "is always bad," says Jill J. Page, OTR/L, an industrial rehabilitation consultant with ErgoScience, Inc., in Birmingham, Ala. Oxygen deprivation can occur in many ways; for example, if you sit or stand in one fixed position for a long period of time.

When Calgary, Alberta, jewelry artist Kari Woo got an RSI scare, she saw both a chiropractor and a massage therapist, and discovered that the problem was in her shoulders. Both professionals "agreed my shoulder muscles were so tight that it was creating a lack of blood flow to my forearms and fingers," she says.

Sitting on a chair that is at the wrong height for you or sitting so that your calves are pressed against the edge of the chair seat can restrict blood flow. "If you constrict blood flow in one area, you constrict it throughout the body because circulation is a closed system," says Page.

Your environment and habits can also affect the amount of oxygen in your body. Smokers are at higher risk, as are jewelers who work in a fumy environment. Sleeping on your stomach, with the neck in an awkward position, decreases the body's access to oxygen. And birth control pills, which draw down the body's level of vitamin B6 (which affects the creation of red blood cells), increase the risk of an RSI.

☞ **In brief:** RSI causes and effects:

- When the tendons in your wrist swell, the resulting pressure on the median nerve may cause Carpal Tunnel Syndrome.
- Muscle fatigue may lead to "trigger points," tiny contraction knots, in the muscle.
- Oxygen deprivation in the muscles brought on by staying in a fixed position for too long, maintaining bad posture, or by your environment or habits (like smoking or working amid fumes) can also cause RSIs.

Who is at risk?

RSIs do not strike everyone equally. You can be predisposed to an RSI. Some people have smaller-than-average carpal tunnels and so are more susceptible to CTS, says Vaughn. Maine jewelry artist Rachel Flaherty discovered that the nerve through her wrist is routed somewhat differently than in the average person, making it more susceptible to pressure when she works.

People with diabetes recover more slowly from injuries, says Conway, and as a result, cannot withstand as many repetitions as someone without the disease.

Although arthritis is not technically an RSI, "sometimes there is arthritis in the

"IT NEVER OCCURRED TO ME THAT I WAS DOING DAMAGE TO MY JOINTS BY BEING A JEWELER... THAT [THE MEDICAL] TERMINOLOGY OF 'ABUSE' IS WHAT I'VE BEEN DOING AS A LIVING."

family and the longer you do [jewelry work], the greater the likelihood that you'll develop an RSI," says Margot Miller, vice president of WorkWell Systems, Inc., in Cloquet, Minn.

Shiga had expected to develop arthritis because of her family history. However, she was shocked when her doctor told her it was developing early because she abused her hands. "It never occurred to me that I was doing damage to my joints by being a jeweler," says Shiga, "that [the medical] terminology of 'abuse' is what I've been doing as a living."

RSIs usually affect people over 30, but you're never too young, as both Flaherty and North Carolina jewelry artist Joanna Golberg are painfully aware. Golberg was going to school and working for a jeweler outside of classes when she developed trigger finger in four fingers.

(In trigger finger, the fingers "catch" or get painfully stuck when you try to move them, because the tendon cannot slide smoothly within the sheath. Repetitive gripping is one of the biggest contributing factors to trigger finger, according the Mayo Clinic's Web site.)

Flaherty's CTS began after she finished her bachelor's degree and went to work for someone else. "It was different from making my own work because I was doing the same thing every day," she says. As she worked, the muscles in her hands and wrists became big enough to pinch the nerve, causing pain and numbness.

In brief: Your personal body structure may make you more susceptible to developing an RSI. People with diabetes are slower to recover from injury, and those with arthritis or a family history of the condition are at higher risk of developing RSIs.

Treatment

The treatment you can usually least afford when an RSI reaches screaming intensity is rest from your work for weeks or months. But you may need more than that.

Sometimes surgery is the only option, but it often provides immediate relief. Cortisone injections have given some jewelers relief from inflammation for years. (Cortisone can have side effects; some doctors limit the number of injections they prescribe. Be sure to discuss the advantages and disadvantages with your doctor.)

However, other, noninvasive treatments may be just as effective, though they may take longer to realize the benefits. Golberg, for example, has had great success with acupuncture, "way over Western medicine," she says.

Massage can relieve trigger points, can move metabolic wastes, like lactic acid, into and through the lymph system so it can be released from the body, can relax and lengthen muscles that have tightened up during work, and can release an automatic physiological effect called "splinting," in which the muscle fibers around an injured area tighten to "splint" the affected muscles.

Laurel Freeman, BA, LMT, spokesperson for the American Massage Therapy Association, recommends massage, even if only once a month, as a preventative measure. "Your body learns to look forward to that time, allowing the muscles — including tendons and ligaments — to open up, expand, and relax," she says.

A massage therapist can also demonstrate self-massage techniques to use between visits. Massage is aided by regular strengthening and stretching exercises, says Freeman, that "allow the muscles and the joint areas to acclimate to the workload that they do."

Another treatment, physical therapy, might be as simple as icing injured muscles and using a resting splint (the kind you buy at the drugstore) at night. "If you need to wear one during work, it has to be made for you," says Miller. Icing and splinting might be augmented by "some manual therapy, some massage, some stretching. We might get in deeper and give some real treatment for a short period of time."

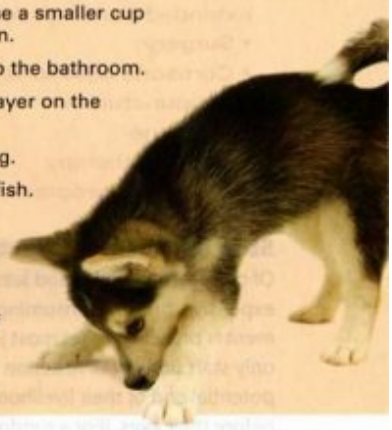
Depending on the severity of your symptoms, a physical therapist might try to keep you working. "This is especially true if someone is working for herself, like an art jeweler," says Miller. "We would keep her as active and as productive in her job as possible while putting some restraints on [her activities] so that we don't lose ground by putting her back to work." You might work only a few hours a day, with frequent breaks for stretching and rest.

GET UP AND MOVE IT!

Here are a few suggestions to get you out of your chair. (And while you're up, stretch!)

- Set a timer for 20 minutes and put it on the other side of the room so you have to get up to reset it. (Annoying, but effective — if you reset it.)
- Put the coffeemaker in the other room. Use a smaller cup so you have to get up to refill it more often.
- Drink a lot of water to keep you heading to the bathroom.
- Play only one CD at a time, and put the player on the opposite side of the room.
- Stand up for some tasks, such as soldering.
- Play with the cat. Walk the dog. Feed the fish.

If none of these ideas work, paint a dollar sign on the top of your bench, the wall in front of it, or the bottom of your filing tray to remind you of the money it will cost you a) in lost work and b) in medical treatment if you develop an RSI. And that doesn't even count the pain!



Chiropractors, acupuncturists, massage therapists, and physical therapists are trained to know their limits. A good professional will refer you to a physician or other health care professional if their treatment does not help you within an appropriate amount of time.

In brief: Here are some ways people treat RSIs:

- Rest from work for an extended period of time
- Surgery
- Cortisone injections
- Acupuncture
- Massage
- Physical therapy
- Seeing a chiropractor

Stop RSI before it starts

Of course, the best — and least painful, expensive, or time-consuming — treatment is prevention. Yet most jewelers only start preventative action when the potential end of their livelihood dances before their eyes. (For a rundown of preventative measures, see "Preventing RSI: 16 Tips," *opposite*.)

It seems obvious that muscles are fatigued by work, but if we stay within 30 percent of our full capacity for exertion, we can work for longer, says Conway. Once we go above that 30 percent, we fatigue quickly.

Your exertion limit is not strictly tied to the amount of time you spend working. You can exceed your exertion limit by working the wrong way: sitting in the wrong position, working at the wrong height, at the wrong angle, with the wrong tool or without a tool at all. You may get away with it for one job or a few, but do it over and over again, and you may have an awful moment of revelation.

Philadelphia jeweler Marjorie Simon had her revelation one Christmas when she had a short time in which to finish a commissioned necklace with more than 30 spiculum forms. By the time she finished, pain was radiating from her elbow down her arm.

After talking to another artist who regularly makes hundreds of spiculum forms without injury, Simon discovered she had been using a poor forging technique. "I was not in a good position with the way I was using my body, and I was not working at the right height for what I was doing," she says. Her error cost her three months' work.

Simon ran afoul of a healthy working triad. "Repetition, force, posture are the three elements in setting up an RSI," says Conway. You can get away without injury if only one element of the triad is out of whack. If you have to make dozens or hundreds of the same form, the other two elements of the triad — force and posture — must be perfect. If, for some reason, your posture has to be poor, use minimum force over very few repetitions. "One [element] can be high and the others low, but the best on the body is if all are low — low reps, low force, and perfect posture," says Conway.

Attaining perfect posture for each task may involve calling a professional in occupational safety to come to your site, watch you work, and make suggestions. "Everyone has a different physiology," says Miller. "We try to get the individual in the best position so that they're working in a relaxed and neutral body position rather than having the muscles hold [them] up."

Perhaps the key to keeping yourself healthy is to pay attention to what your body is trying to tell you. In other words, listen to the pain. "You ignore the symptoms [like tingling and twinges] at your peril," says Simon. "If I have pain, I stop. I won't try to work through something anymore. That's a recipe for the bigger injury."

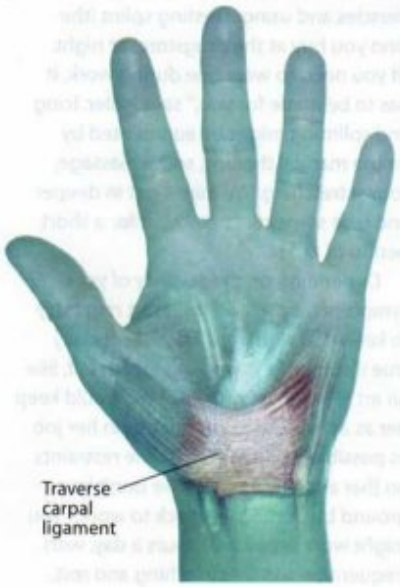
"A twinge here and there, that's normal," says Page. "But the moment you have consistently repeating symptoms, be aware. It's easier to catch it on the front end and solve it with changing your position and taking rest breaks and looking at the work station, before you're into a full RSI situation."

Caring for your health and paying close attention to your hands, wrists, neck, shoulders, and back is not something to think about later, after this job or when you're older. It's something to do something about now, today. Because a great number of metalsmiths are like Joanna Golberg, who says, "Making jewelry is not just my job, but what makes me happy. It keeps me personally fulfilled. What can I do if I can't do this?"

In brief: Here are some RSI preventative measures:

- Stay within your exertion limit by working at the right height, at the right angle, and with the right tool.
- Keep at least two elements of the healthy working triad (repetition, force, and posture) perfect at all times.
- Get suggestions at your work site from an occupational safety professional.
- Pay attention to your body.
- Don't wait — start caring for your health today.

...MOST JEWELERS ONLY START PREVENTATIVE ACTION WHEN THE POTENTIAL END OF THEIR LIVELIHOOD DANCES BEFORE THEIR EYES.



PREVENTING RSI: 16 TIPS

Admittedly, it's not easy to change the way you work; how often do we try to change a habit or start an exercise program? But if it makes a difference in being able to work longer at what you love, it makes sense to give it a try. Here are some basic rules to follow to keep your hands in good working order.

1 **Vary your tasks.** "If you're doing one piece, and doing all the different steps, you're using your hands in different ways as you go through the process instead of soldering 100 of the same thing," says Laurel Freeman of the American Massage Therapy Association. "It's made a tremendous amount of difference just varying what I'm doing," says jewelry maker Rachel Flaherty. "It took some adjustment for me to work on multiple things at a time, but that has proven, for me, to be crucial to working at all."

2 **Remember the healthy working triad.** Work with perfect posture for whatever task you're doing, minimize the force needed as much as possible, and reduce the repetitions. Allow only one part of the triad to be out of balance, and only for a short time, to avoid injury.

3 **Work in a body-neutral position.** Body neutral, says Dr. Cynthia Vaughn, DC, means your back is straight and supported, your knees are bent at 90° (not too high or low), your feet are flat on the floor, your elbows are bent at 90°, and your wrists are as close to level as possible. Short people may have to bring in a stool; tall people may have to raise their benches.

4 **Practice the 20 minute rule.** No matter what you're doing, says Dr. Steven Conway of the American Chiropractic Association, stop every 20 minutes. Get up and move around. Stretch for 10 or 15 seconds. When you stretch, consciously stretch in the opposite direction. If your head is forward and down, move it up and back. If your arms are up and forward, move them down and back. Take deep breaths and expand your chest. Stretch your fingers out as far as they can go to get relief from a pinch grip. Remember to take your Optivisor off and rest your eyes as well.

That's all it takes. But remembering to stop and do it, well, that's where the personal retraining has to take place. (See "Get Up and Move It!" *page 29*, for suggestions to get you out of your chair.) "It usually takes at least 30 days for adults to change their habits," says Jill Page, an industrial rehabilitation consultant. "If you can concentrate on your attempt to change, you'll have a greater likelihood of succeeding. You have to take small steps to accomplish that. If you're invested in being comfortable, then you'll make the changes."

5 **Use tools.** Yes, your hands are quicker to hold something, but a pinch grip can create damage in your hand. Hold work with a ring clamp or Benchmate. Use a benchtop drill press rather than your fingers and your handpiece.

6 **Make your tools more comfortable.** Buy ergonomically designed tools that fit your hands, or use thermoplastic or sports racket tape to pad pliers or hammer handles.

7 **Think big.** Use the largest joint available when performing any action, says Page. "Pushing a drawer shut with your whole hand as opposed to using one or two fingers is less stressful on the tissue. Apply that principle wherever you can."

8 **Adjust your bench and tables to fit.** At the suggestions of a physical therapist and an occupational therapist, Flaherty, who is tall, lowered her chair and raised her bench, her soldering tables, and the tables holding her belt sander and polishing machines.

Be sure you're doing it right, though. "One of the problems with adjustable equipment is, how do you adjust it correctly to fit you?" says Page. "Most people don't know. They adjust to comfort but not necessarily into a position of health."

9 **Hire help.** If you get a big order or a commission that requires the manufacture of many identical pieces, get enough of a down payment so you can hire help with the sawing, polishing, or whatever. Be aware of the health of your helper, though. You don't want to pay disability for someone who develops an RSI while working for you!

10 **Think outside the bench.** Jeweler Kristin Mitsu Shiga's injuries, coupled with arthritis, mean that she can no longer depend on jewelry making as her primary source of income. She now teaches or does other arts-related work. "I save the work-making for shows I care about or issues and techniques I want to work out," she says.

11 **Take care of yourself.** "Doing something that's good for you is like buying an insurance policy," says Freeman. Integrate whatever practice helps you relax and helps stretch your muscles. Barbara Simon does yoga and swims, while her fellow jewelry maker Joanna Golberg stretches her hands during her work day. Make a regular walk or exercise date with a friend. Make use of massage therapists, acupuncturists, and chiropractors. And while hobbies are wonderful, be sure they're actually doing good; some hobbies, like knitting, can actually exacerbate the problem.

12 **Enhance your oxygen intake.** Anything that interferes with your body's ability to absorb oxygen affects the ability of your muscles to recover from fatigue. Be sure your work space is vented, with downdraft ventilation that pulls soldering and other fumes away from your face. Talk to your health care practitioner about other ways to enhance oxygen absorption and muscle-recovery time, including vitamin supplements.

13 **Practice good habits.** Develop work habits that let you get enough rest at night, eat right, exercise, and relax. And don't feel guilty about it!

14 **Buy disability insurance.** Jewelry maker Kari Woo advises that you take out insurance, just in case. "Don't expect so much of yourself that your health suffers," she says.

15 **Wear wrist supports.** Several jewelers continue to wear wrist supports at night even though their RSI flare up has passed. Before buying or using a support, talk to your health care professional, as the wrong support can create its own problems.

16 **Talk to professionals.** Ask other jewelers for their suggestions. If colleagues can't help, hire an occupational therapist to examine your site and your specific working situation, and follow his or her instructions!

intermediate

enamel
metal

SIFT ON, SCRATCH OFF

Scribble into Enamels – Sgraffito Revealed

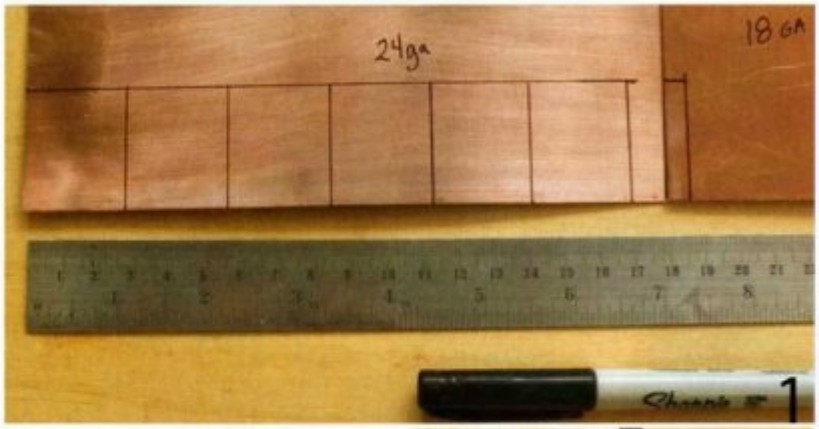
You'll have **fun** *playing with this* ***forgiving, inexpensive*** *technique.*

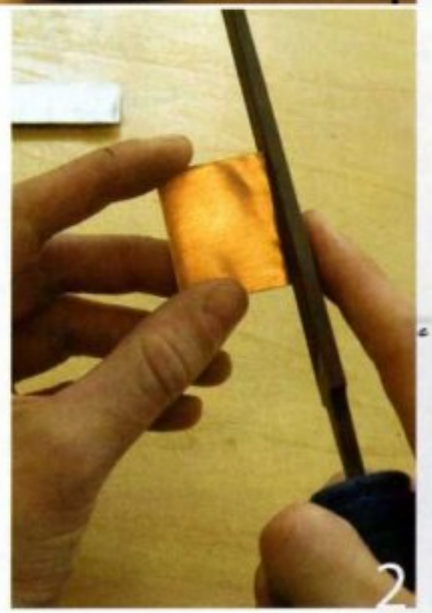
Generously sized bracelet panels provide plenty of surface area for sgraffito doodles and drawing. 7⅜ x 1⅜ in. (18.7 x 3.5 cm).

by Angela Gerhard

Sgraffito (also spelled "scraffito") is a subtractive technique; you scratch through the surface of a material to expose the layer beneath. Painters use palette knives or other tools to scrape through layers of paint to create sgraffito designs. Potters scratch through glazes or slip to draw on ceramic ware. And enamelists scratch through a layer of powder or liquid enamel to reveal a base layer of fired enamel, or sometimes, bare metal.

Experimenting with sgraffito techniques on scraps of copper sheet is a fun way to try this process. But it's even more fun to experiment on copper panels that you can link into a bracelet, as in the project I'll show you how to make. If you prefer enamels with a glossy finish, skip the step of etching the enamel's surface, which makes it matte. Personally, I like the color quality and velvety feel of etched enamel.





Videos & Basics

Check out these bonus tutorials for fundamental techniques used in this project:

- Sawing/piercing B V
- Drilling V
- Using a bench shear V
- Soldering B V
- Sifting enamels B V
- Opening and closing jump rings B V

B Basics, *page 71*
V Videos, www.artjewelrymag.com/videos

materials

- Copper sheet:
  - 24-gauge (0.5 mm), 8½ x 7 in. (21.6 x 17.8 cm)
  - 18-gauge (1.0 mm), 2 x 1 in. (51 x 25.5 mm)
- Copper tubing: 2 mm inside diameter, ⅛ in. (3 mm)
- Copper or bronze jump rings: 18-gauge (1.0 mm), 8 mm outside diameter, 14–16
- Enamels: 80-mesh, medium temperature/medium expansion
  - Black
  - Opaque colors
- Liquid enamel

toolboxes, *page 73*

- Sawing/piercing
- Hammering
- Enamel
- Soldering (optional)

additional tools & supplies

- Permanent marker: fine tip
- Bench shear (optional)
- Machinist's square
- Swage block, shallow wooden bowl, or bracelet mandrel
- Sandpaper: various grits
- Eutectic solder (optional)
- Copper-cleaning agent (optional)
  - Baking soda
  - Pumice powder
  - Citric acid
- Dental tool or needle tool
- Flat-tip paintbrush
- Palette knife (optional)
- Scratching tool: dental pick, scribe, etc.
- Flexible diamond laps (optional)
- Glass-etching cream (optional)
- Pliers: chainnose or flatnose, 2

See Suppliers, *page 77*
See Safety Basics, *page 74*

PART 1: Metal

Measure and mark copper sheet. Use a ruler and a scribe (or a fine-tip permanent marker) to draw six 1⅜ x 1⅛-in. (35 x 29 mm) rectangles on a piece of 24-gauge (0.5 mm) copper sheet. On a piece of 18-gauge (1.0 mm) copper sheet, measure and mark a 1⅜ x ¼-in. (35 x 6.5 mm) strip for the bracelet's toggle **[1]**.

Cut out the panels and square the corners. Use either a jeweler's saw B V with a 3/0 blade or a bench shear V to cut out the rectangle panels and the toggle strip.

Place the panels and toggle strip on a bench block, and flatten them with a rawhide mallet. Place a panel against the 90° angle of a machinist's square, rotating the panel to check that each of its corners are square. Repeat with the remaining panels. File the edges of any uneven panels to make their corners square **[2]**. File the edges of the toggle strip.

NOTE: Your bracelet will be much easier to assemble if all of your panels have square corners.

Make a clasp panel. Make a photocopy of the templates, *opposite above*. Subscribers, you can avoid cutting up your magazine, by downloading a PDF at www.artjewelrymag.com/reference R.

On one panel, use **Template A** to mark a ½-in. (13 mm) square and two dots for the jump ring holes; this will be your clasp panel. Drill V and pierce B V the square.

Use a flat needle file to file the edges of the square smooth; this is the opening that your toggle will fit through. Place the panel on a bench block, and use a center punch to make a dimple at each dot.

Mark and drill holes for the remaining panels. Use **Template B** to mark a jump ring hole in each corner of four more of the panels.

Use **Template C** to mark jump ring holes in the last panel; this will be the end panel that you'll attach the toggle to **[3]**.

Use a center punch and a bench block to dimple all the dots for the jump ring holes. Using a flex shaft and a 2 mm drill bit, drill all the holes for the jump rings **[4]**. Use a file to remove burs from the holes.

Curve the panels. Place each panel on a swage block, and use a plastic or rubber mallet to slightly curve the panels **[5]**. If you don't have a swage block, you can use a shallow wooden bowl or a bracelet mandrel as a substitute.

NOTE: The slight curve in the panels serves two purposes: it will make the assembled bracelet more comfortable to wear, and the warp-resistant contour means that the enamel is less likely to chip off.

Solder a tube to the toggle strip. (If you would rather use a cold connection for your toggle, see "Solder-Free Toggle," *below*.) Use a jeweler's saw with a 2/0 blade to cut a ⅛-in. (3 mm) piece of copper tubing. Sand the ends of the tube smooth.

Center the tube on the toggle strip; the open ends of the tube should face the short ends of the strip. Use eutectic solder to solder the tube to the strip **[6]**.

TIP: Enamelists use eutectic solder because it has a higher flow point (1460°F/793°C) than most solders, so it can withstand enamel-fusing temperatures. The type of eutectic solder they use is composed of fine silver and copper; its zinc-free composition prevents it from reacting adversely with enamels.

Using a needle file and 400-grit sandpaper, remove any excess solder from the toggle strip.

Clean the copper panels and toggle. Use your preferred method to thoroughly clean all the copper components. For cleaning techniques, see "Get That Copper Clean," *page 36*.

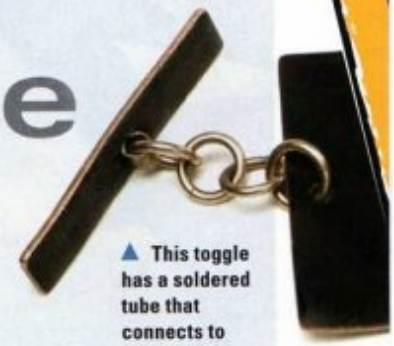
I clean copper by heating it in a 1500°F (816°C) kiln until a green haze appears on the surface of the metal. I make sure to remove the metal before firescale begins to form. Then I quench the metal in water, pickle it, and neutralize the pickle by dipping the metal in a solution of baking soda and water. A rinse under clean water completes the job **[7]**.

After the metal is clean, handle it only by the edges.

Template A Template B Template C

solder-free toggle

Instead of soldering a tube to the back of your toggle strip, drill two holes approximately 2 mm apart at the center of the toggle strip. When you assemble the bracelet, thread a jump ring through the two holes instead of through the copper tube in the soldered version.



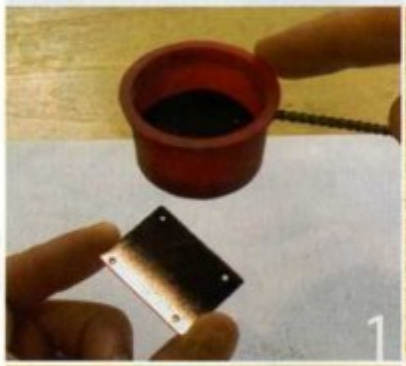
▲ **This toggle has a soldered tube that connects to the chain of jump rings.**

get that copper
clean

Metal must be clean and free of oils and oxides before you enamel on it; enamel will not fuse properly to metal that is dirty or oily. Here are a few options for cleaning your copper components:

- Use a Scotch-Brite pad to scrub the metal under running water until the water sheets across the metal's surface.
- Make a paste from pumice powder and water, and use the paste to clean the metal.
- Scrub the metal with a sprinkling of salt and vinegar.
- Instead of using a typical pickle solution made from sodium bisulfate, mix up a less caustic solution of citric acid. You can find citric acid at beer- and wine-making suppliers. Wear safety glasses, and in a well-ventilated area, mix one part of citric acid into 10 parts of water. Always add acid to water — never water to acid.

After cleaning your metal, rinse it thoroughly. If the water beads up, then you've still got grease or oil on the metal and you need to scrub some more!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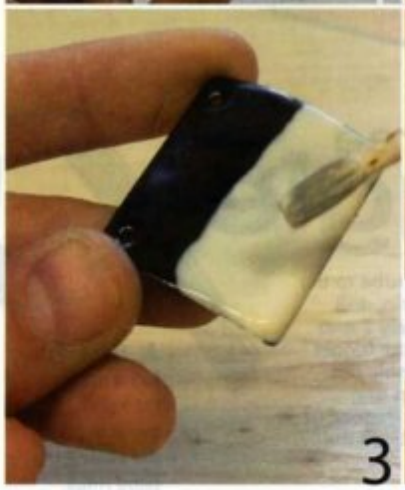
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PART 2: Enamel

Counterenamel

NOTE: Because I used opaque enamels (instead of transparent enamels), it wasn't necessary to wash the enamels before sifting them on the panels.

Counterenamel the panels and the toggle. With your nondominant hand, hold a panel by its edges, front-side down. With your other hand, spray or brush a coat of Klyr-Fire onto the back (concave side) of the panel. While the holding agent is wet, sift a generous layer of black enamel over the back of the panel **[1]**.

With a dental tool or needle tool, remove excess enamel from the jump ring holes, the sides, and the front (convex side) of the panel. Set the panel on a firing trivet to dry in a warm area.

Repeat to counterenamel the remaining panels and the toggle.

NOTE: Do not sift enamel onto the tube that you soldered to the back of the toggle. If some grains of enamel do get on the tube, use a dry, fine-tip paintbrush to remove them.

Fire the panels and toggle. Place the components in a preheated kiln set to 1500°F (816°C), and fire until the enamels are fully fused. Remove the components from the kiln and allow them to air-cool completely. The back of each panel will have a smooth, even layer of fused counterenamel **[2]**.

Clean the panels and the toggle. Under running water, scrub the bare, copper front of each panel with a Scotch-Brite pad to remove loose firescale. I don't pickle the panels at this point because I don't find it necessary when I'm covering the panels with opaque enamels.

online extra

For a primer on enamels that includes a mini glossary of terms and enamel safety basics, check out www.artjewelrymag.com/reference.

Base coat

Sift enamel onto the fronts of the panels and the toggle. Using the same technique as you did to counterenamel the components, sift a base layer of black powdered enamel (not as thick as the layer of counterenamel) onto the fronts of the panels and the toggle. The base layer doesn't need to be as thick because you'll be adding more enamel to the fronts of the panels later.

Fire the panels and toggle. Fire the components as you did to fully fuse the counterenamel. Allow the components to air-cool completely.

Sgraffito

Prepare enamels in sifters. Select your opaque powdered enamel colors. Fill separate sifters one-third full with a single enamel color.

Apply liquid enamel. Use a flat-tip paintbrush to apply an even coat of liquid enamel in a color of your choice to the front of a panel. The liquid should be thick in order to conceal the base coat of fused black enamel and should not run off the panel's edges **[3]**. Do not allow the liquid to dry.

NOTE: The liquid enamel should be the consistency of heavy cream. You can thin liquid enamel by adding distilled water or thicken it by allowing some of the water to evaporate. Be sure to stir gently to minimize the formation of air bubbles.

Immediately sift the powdered enamels. Sift one layer of powdered enamels onto the wet liquid enamel. You can use just one color per panel or sift multiple colors one at a time, like I did **[4]**.

Using the back of a palette knife or a clean finger, gently pat the powdered enamel into the wet enamel.

Scribe a pattern into the enamel. Use a dental pick, scribe, or other pointed tool to scratch through the layers of powdered and liquid enamel to expose the black base coat **[5]**.

Excess enamel will build up next to the scratched lines. Carefully remove this excess enamel with your scribe or scratching tool. Or, gently tap an edge of the panel with your finger to dislodge extra enamel.

Remove excess enamel. Working from the back of the panel, use a needle tool to remove enamel from the jump ring holes.

Use a damp cloth to remove any liquid enamel from the back of the panel. Place the panel face up on a trivet and allow it to dry completely.

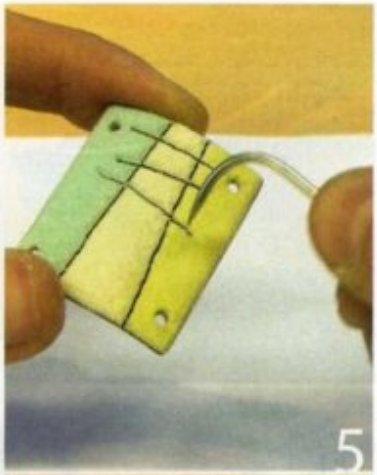
Enamel the remaining panels. Repeat the sgraffito steps to create designs in the remaining panels and the toggle.

For more sgraffito ideas, see "Scratch that Itch to Sgraffito," *below*.

Fire the components. In a 1500°F (816°C) kiln, fire each piece individually (rather than in a batch). This allows you to remove each piece as soon as the enamel is fully fused **[6]**.

TIP: Take care to not overfire a sgraffito design; an overly long firing can cause the scratched lines to appear fuzzy or less defined.

Allow all of the pieces to air-cool completely.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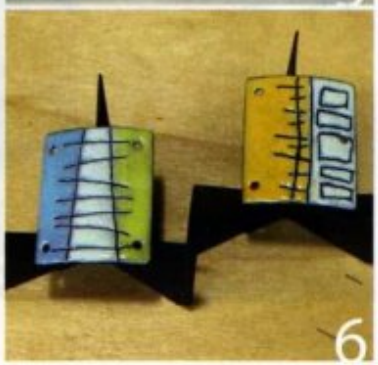
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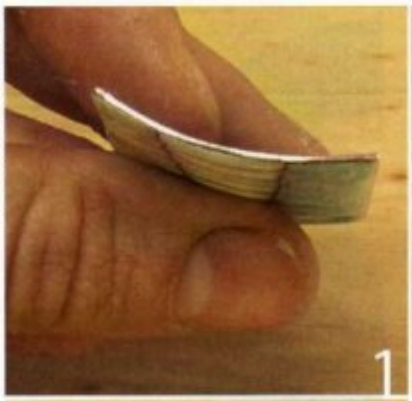
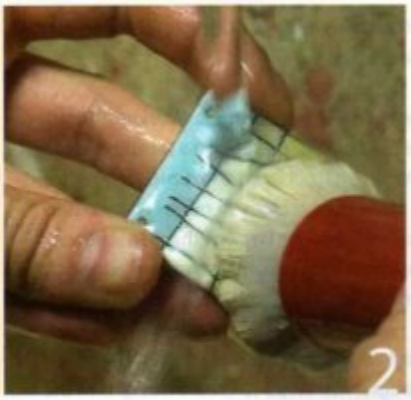
scratch that itch to sgraffito

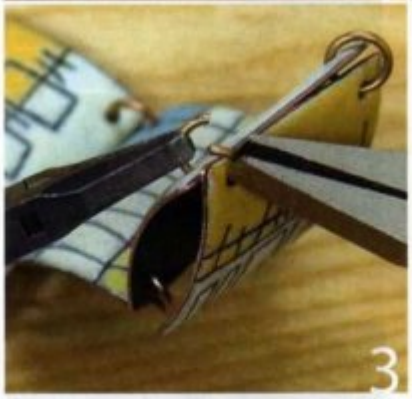
Sgraffito (zgrah-FEET-oh) is a technique that begs to be played with. I encourage you to experiment on your copper scraps and abandoned enamel projects — that's how I make unexpected discoveries. Here are some ideas to get you started:

- To get different line qualities, try scratching your designs with different tools, such as nails, needle tools, old burs, brushes, etc. Experiment to see what you like best.
- Instead of brushing a layer of liquid enamel on your base coat, apply Klyr-Fire and sift enamels onto the Klyr-Fire. Scratch directly through the powdered enamel to the base coat.
- I applied black enamel for my base coat, but you could try another color. Or, sift a ground coat in multiple colors.
- Skip the base coat altogether. Apply Klyr-Fire and then your layer of sifted powder, and then scratch through to reveal the bare copper.
- Apply a layer of liquid enamel and allow it to dry, and then scratch through it.
- Experiment with layers of transparent enamels over a layer of opaque enamels.
- Combine sgraffito techniques with other enamel techniques, such as sifting through stencils or screens, using enamel decals, using painted enamels, and using enamels in lump or thread form.

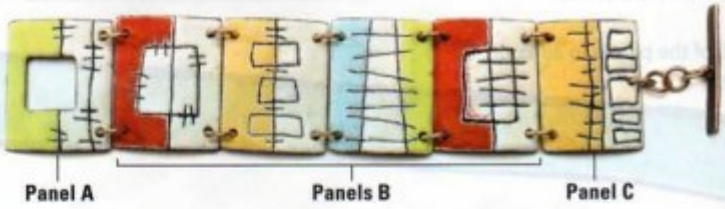
Process photos by Angela Gerhard.







Not ecstatic with your panels? Check out "When Good Enameling Goes Bad," *page 39*, for those "oops" enamel projects that beg for a do-over.



PART 3: Finishing

Smooth the edges of the panels and the toggle. It's not uncommon for the edges of a panel to fuse to the trivet during firing. These fused spots can create sharp points of enamel when you remove the panel from the trivet.

Using an alundum stone under running water, file the edges of the panels smooth until the edges are shiny and bright **[1]**. You can also use flexible diamond laps or 400-grit wet/dry sandpaper.

Etch the panels and the toggle. If you like a glossy finish, skip to the bracelet-assembly steps. For a bracelet with a matte surface and a ceramic-like quality, etch the panels with a glass-etching cream.

Be sure to work in a well-ventilated area and wear eye protection and nitrile or latex gloves when using etchant solutions. Follow the manufacturer's instructions to etch the front and back of the panels and the toggle.

Rinse the panels and the toggle. Rinse the components under running water to thoroughly remove the etchant solution. Use a fiberglass brush under running water to remove any trace chemicals **[2]**.

NOTE: Fiberglass-brush bristles can break. To avoid getting broken fiberglass-brush bristles in your fingers, wear latex or nitrile gloves.

Dry all of the components with a clean soft cloth.

Assemble the bracelet. Using two pairs of chainnose or flatnose pliers, use jump rings B to connect the panels **[3]**. Panels A and C should be at opposite ends.

Link three or four jump rings to make a chain. (For a longer bracelet, use more jump rings to make a longer chain.) Link one end of the chain to the tube of the toggle. Link the other end of the chain to the jump ring hole in panel C.

DO-OVER!

When Good Enameling Goes Bad

Can your disasters be saved? Find out when de-enameling makes sense.

Associate Editor Addie Kidd had fun intentionally botching "Bad" when she enameled this piece of copper. For the full story, visit the Editors' Blog at www.artjewelrymag.com.

by Pam East

If your enamel has turned out terribly (horrible color, grotesque bubbling, unsightly cracks, etc.) there is a way you can remove it to rescue the metal underneath; with some basic ingredients and a kiln, you can de-enamel your piece.

De-enameling works well for removing enamel from sheet metals like fine silver or copper. But you need to be more deliberate when deciding whether to remove enamel from fired silver metal clay, because you could get negative side effects — mainly, you may not be able to reapply enamel evenly to metal clay again (possibly because metal clay is slightly more porous than metal sheet).

Still, for both metal sheet and metal clay, consider de-enameling as a last resort for pieces that would otherwise be destined for the recycling bin.

First, you'll need to answer a few quick questions to determine if de-enameling is your best option. If it is, read on to learn how to clean and prepare your salvaged metal for a new coat of beautiful enamel.

should i de-enamel?

For both metal sheet and metal clay, you can't keep applying enamel and taking it off until your piece is perfect. Particularly for metal clay, problems will magnify each time you repeat the process. Removing the enamel may leave the surface of your metal clay coarse and pitted, and subsequent enameling attempts may fail to adhere to the silver.

Before you decide whether to de-enamel your piece, you need to ask yourself these questions:

To de-enamel...

- ❑ Did the enamel turn out terribly?
- ❑ Is the enamel beyond repair?
- ❑ Is the enamel pitted, burned, or bubbled?

If this is the state of your enamel, then remove it; the metal-saving possibility is worth the risk. Since your piece is truly destined for the recycling bin, nothing valuable can be lost by attempting to de-enamel it.

...or, not to de-enamel?

- ❑ Are the colors or is the design different from what you expected but still acceptable?
- ❑ Is the enamel salvageable? For example, could you layer another color on top, use abrasives to remove some of the enamel, cover a bad spot with a design element, etc.?
- ❑ Would anyone else know it was wrong if you didn't inform him or her?

If your enamel falls into this category, it's better to leave your piece intact. Try to let go of what you envisioned, and embrace the results you got.

I like to think of enameling as a constant source of surprises and "design opportunities." We often focus on what we didn't achieve and lose sight of some of the beautiful things that we did. Remember, others looking at your work won't know what was in your head when you made it, and they'll judge it differently than you do.

materials

- Piece of enameled metal sheet or metal clay to be de-enameled

toolbox, *page 73*

- Enamel

additional tools & supplies

- Table salt
- Cream of tartar
- Mica sheet
- Steel-wire brush: stiff
- Vinegar
- Baking soda
- Tumbler, steel shot, burnishing compound
- Burnisher: metal or agate
- Patinating or resin supplies (optional)

See Suppliers, *page 77*
See Safety Basics, *page 74*

You can remove scorched and ugly enamel to save the textured metal underneath.

Basics
To check out a bonus tutorial B on tumble-polishing, see **Basics, *page 71.***

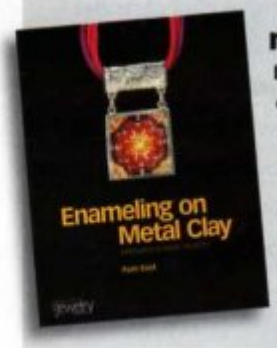
dealing with stubborn residue

De-enamel again

If your first round of de-enameling doesn't work to fully remove the residue, repeat the de-enameling process. Then refire the metal again to prepare it for new enamel.

If all else fails, try another surface treatment

If re-enameling won't work, you could try to patinate the piece with your favorite patina instead. Or you could color the metal with resin.



more from this author

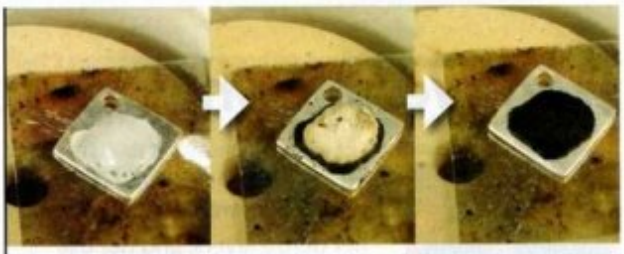
Instructions on how to de-enamel originally appeared in *Enameling on Metal Clay: Innovative Jewelry Projects* by Pam East, from Kalmbach Books. The book is available at the *Art Jewelry* store at www.artjewelrymag.com.

Also, if you're looking for an easy enameling project to get you started, check out East's "Metal Clay Champlevé" pendant project, which appeared in the September 2005 issue of *Art Jewelry*. If you don't have the issue, you can buy a downloadable PDF of the project at www.artjewelrymag.com/projects.

Part 1: De-enameling

Mix equal parts table salt and cream of tartar. Add just enough water to make a thick paste.

Using a paintbrush or other applicator, apply a thick coat of paste to the enamel.



Put the piece of enameled metal on an old sheet of mica (don't reuse this mica for enameling; reserve it for de-enameling only).

Place the sheet of mica with the enameled metal on top in a kiln preheated to 1450°F (788°C). Fire the metal for 2–4 minutes. Make sure there is adequate ventilation, as the paste will burn and blacken, producing smoke.

Wearing heat-resistant gloves and using a pair of insulated tweezers, remove the metal from the kiln. While the metal's still glowing hot, drop it into a bucket of cold water.

Upon contacting the water, most of the enamel and crusty black residue should break away from the metal. If there is any remaining residue, chip it off of the metal using a pair of tweezers or another metal tool.

Process photos courtesy of Kalmbach Books.

Use a stiff steel-wire brush and soapy water to remove the remaining black residue. If you had a very thick coat of enamel, you may have to repeat this five-step procedure more than once.

Before

After

Part 2: Re-enameling

Your metal must be clean and free of both enamel and the de-enameling paste residue before you can attempt to re-enamel it. To ensure that your piece is ready for new enamel, follow these steps.

Fire the metal. In order to improve re-enameling results, you'll need to completely re-fire the piece without enamel.

Place the piece of de-enameled metal in a kiln preheated to 1600°F (871°C). Leave the metal in the kiln for at least 10 minutes, then carefully remove the piece and quench it in water.

If any residue is still visible after this firing, try to remove it with a stiff steel-wire brush.

Pickle the metal. Soak the metal in hot vinegar to pickle it. After pickling, neutralize any vinegar left on the metal by submerging the piece in a solution of baking soda and water, then rinse well.

TIP: When enameling on metal clay, I prefer vinegar over traditional Sparex as my pickle. I find that Sparex can cling in the micro-crevices and adversely affect enamel's adhesion.

Burnish the metal. When the metal is clean, burnish it well to help refine the surface of the metal. Tumble the metal B in a tumbler with steel shot and burnishing compound for a minimum of 2 hours. If you are enameling smooth areas, you can use a metal or agate burnisher to smooth the surface as well. A

A conversation with Judith Kinghorn

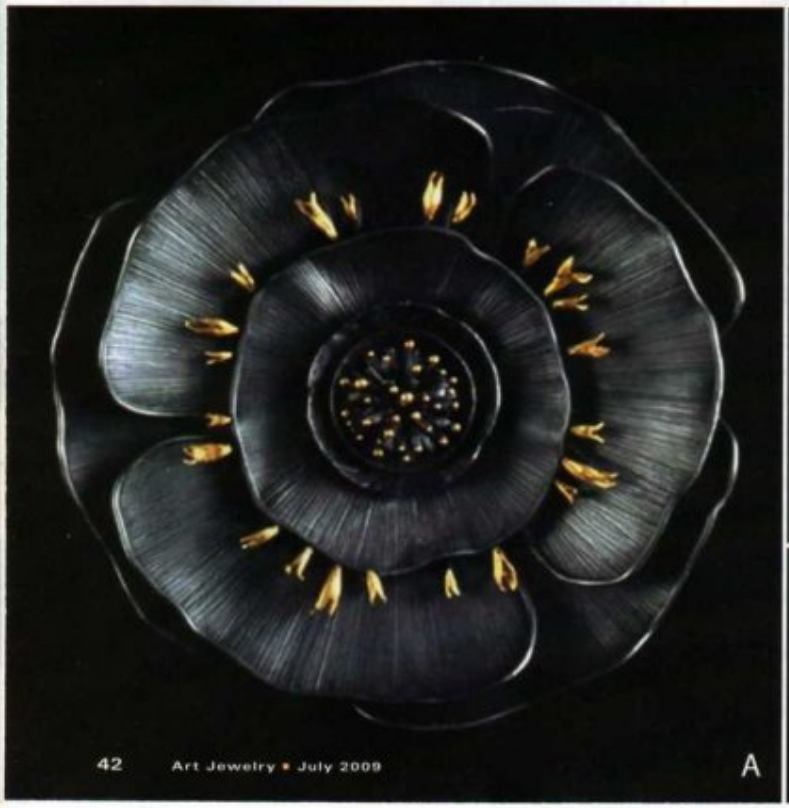
Known for her intricately patterned and granulated surfaces, her dense layers, and her use of rich colors — both in stones and contrasting metals — Judith Kinghorn creates jewelry of jaw-dropping complexity. Kinghorn resists marketing herself, views customers as friends, and has built her success on a network of solid relationships and dedicated collectors of her work. —*HLW*

Researching you was tough, because there's not much out there about you. Was it a conscious decision, to hold yourself back?
I think it's just a matter of time. I'm not a very focused person! I work about 16 hours a day going in every direction and I don't really think about marketing. I *just* put up a Web page — everyone in my life was on me about that! The jewelry has kind of been a thread running through the rest of my unfocused life.

You started in interior design; when did the jewelry bug bite?
I dabbled in making jewelry over the years. When I was young, I'd take my allowance to the hobby shop and make things out of seashells and such for my mother. She was nice enough to wear them, and I thought, 'I must be really good!'

I did take a class to learn how to make my own findings. At that time, there wasn't a lot of instruction; I was left in the room and I could use the tools and ask questions. So I'm more self taught than not. I did take a workshop with Harold O'Connor in 1990; he taught me granulation and gold overlay. That was a real turning point for me, and led to me experimenting with other materials.

Do you remember your first piece?
My first piece in metal was a misshapen heart-leaf thing that took a lot of pounding. My first piece for a class — I had a vision of a silver cuff with compound curves and beaded edges. The instructor told me that it was impossible, but I had a really clear idea of it, and she was good enough to say, 'Let's try it.' It took a lot of pounding and it took each of us using a torch to get enough heat, because it was a big, thick metal bracelet. I wore it all the time, and people would come up and ask me about it, and ask to buy it, and I didn't want to sell it.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But that's the very first piece of advice that jewelers get, to wear their work, because it sells it — and then you don't sell it?
No! I remember once, I was wearing earrings that a woman wanted to buy, and I refused. She came up to me a few years later at a show, and said, 'I remember you! You're the woman who wouldn't sell me your earrings. I see you got over that.'

You hand fabricate everything. Does this surprise people?
Yes. Especially people who have made jewelry, because they understand what goes in to making a piece like that. One piece can take 40–100 hours of work.

And you don't plan out your pieces ahead of time?
Yes, I work directly in the metal; I usually don't make any kind of drawing. I just start working, and I don't even know what it's going to look like. As you can tell, I'm not very left brain!

That's really amazing. Usually, the more complex a piece, the more jewelers advise preplanning.
Well, I also have a whole drawerful of pieces that didn't work! But it's not wasted — maybe it didn't work, but that makes it another thing to be discovered. Maybe a petal didn't work, so I'll stick it in a drawer, and then when I'm working on a completely different piece, I'll open the drawer and think, 'Oh, I like this! This will work.'

Most of your pieces are all metal, but when you use stones, they dominate the piece.
When I do work with stones they're unusual stones that have captured me, so I start with the stone and then work on a way to frame it. I've never been good at adding a stone to piece afterward. People tell me, 'You could add a stone here,' or 'It would be smart to add a diamond here,' and I just say, 'But I don't want to.' To me, it always looks like an afterthought.

That's supposed to be good for business, because diamonds, even small ones, mean a higher retail price.
I'm not sure how many of us actually make good business decisions! With the economy, we're all thinking about the money side of it differently. I hope it means people are realigning their values to include handmade pieces that have personal meaning.

In a bad economy, how do you ask someone to spend money on what is essentially a luxury item?
I'm very good at rationalizing! I'll look at something, and think 'I can't afford that!' and then I think, 'Yes, but, yes, but, yes, but…' If I really like something, I'm never sorry — I like it forever. But if I think, 'I really like this piece, but I can't afford it, so I'll get this little one instead,' then more often than not, I never wear it; I'm always on some level disappointed that it's not the one I really wanted. That's more of a waste of money.

[A] *Poppy* brooch/pendant. Sterling silver, 22k gold. 3-in. (76 mm) diameter. [B] *Container.* Sterling silver, 24k gold. 2¼ in. (57 mm) long, on 36-in. (91.4 cm) chain with slide. [C] *Moldavite* brooch/pendant. Sterling silver, 22k and 24k gold, Paraiba tourmaline. 2 1/16 in. (52 mm) wide. [D] *Spring Promise* brooch/pendant. Sterling silver, 22k gold. 3¾ in. (95 mm) high. [E] *Seascape* brooch/pendant. 22k and 18k gold, limb cast moss agate. 1¾-in. (44 mm) diameter. [F] *Black-eyed Susan* brooch/pendant. Sterling silver, 24k gold. 2½-in. (64 mm) diameter. [G] *Meadowflower* brooch/pendant. Sterling silver, 24k gold. 1¾-in. (44 mm) diameter. Photos by Michael Knott.

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There's something to be said for buying just a few quality pieces that you'll always wear, instead of going, 'Want! Buy!'
We actually do that with tool lust, too. We always want the latest thing. I'll want all of those things, and often I'll get them, and then I'll use them for a while and go back to my old standbys.

Tell me about the old standbys. You use a mouth torch?
A blow pipe, yes. It's a small propane tank with a hose, and you blow through the hose and get a very controlled flame. I use it for fusing gold to silver and for granulation. I do some traditional granulation, but most of it is a bit more unorthodox, and sometimes I'm granulating 22k gold on silver and putting it in unexpected places that don't always follow a pattern. So I have to really have control over the heat.

Can you talk me through the creation of a piece?
I start with heavy sheets, which have to be milled about 30 times to get the gauge down, and you anneal and quench repeatedly during that process. I put the texture on next; often it's brass plates I've etched with a pattern, or drawn a pattern on a plate. Then I start cutting. In a sense, it's like weaving your own textiles.

The shape generally evolves — I'm usually adding pieces all the time. The shape may evolve from the texture of the pieces, but sometimes the texture is only part of the piece. I'm thinking of a piece called *Sea Creature* [*above right*]. Parts are granulated and parts are patterned, and it all ends up in a circle.

Most of us are hooked on the transformation, going from a vision in your head to the dirty, rusty materials as they become crusty and heated, to something that someone else thinks is beautiful, and then to the wearer, who completes the cycle.

Do you have a current goal?
I've never been very goal oriented, I don't know whether you can tell! Shows are physically exhausting, but very valuable for the feedback; I also like to have smaller events in my studio. I'd like to develop something like that where people could have meetings in my studio or wander around and experiment or try things on. I think we're all looking for different ways to reach people. A lot of attendees to the bigger shows think of them as entertainment. You get a lot of people and you get collectors coming to those shows. For me, I become friends with a number of people who buy jewelry from me, so it's nice to see them in a less crowded venue so we can really talk; there's a restaurant in my building, so we might go for coffee. That's the way that's most comfortable for me to work. I'm not a salesperson, and it's not the most comfortable thing for me, but I do like being there, I like seeing all the other people, and I love seeing all the other beautiful things. As far as finding the best way — well, my financial advisor told me I could retire at 90, so I'll have plenty of chances to experiment!

[Above right] *Sea Creature* brooch/pendant. Sterling silver, 22k and 24k gold, copper pearl. 2-in. (51 mm) diameter. [H] *Sampler Bracelet.* Sterling silver, 24k and 22k gold. 3-in. (76 mm) diameter. [I] *Pearls* necklace (detail) and earrings. Pearls, 22k gold, diamonds. Necklace is 16–22 in. (40.6–55.9 cm). [J] *Chrysanthemum* brooch/pendant. Sterling silver, 24k gold. 3-in. (76 mm) diameter. [K] *Dragonheart* brooch/pendant. Sterling silver, 22k gold. 2 1/16 in. (52 mm) high.

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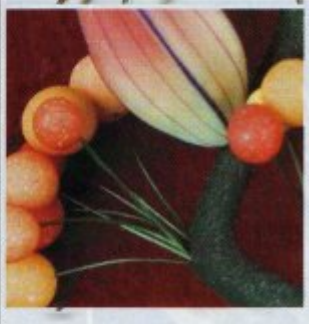
GALLERY



Our ideas are only intellectual instruments which we use to break into phenomena; we must change them when they have served their purpose.
—Claude Bernard

GALLERY

[A] *Helical Mosaic Chevron Bracelet,* by Martha Collins, is made from 550 pieces of wood, which she laminates, slices, re-laminates, and turns. A typical piece will include 12 to 14 species of wood, and the bright lines are hand-dyed veneer. 58 mm (2¼-in.) diameter. Photo by Steve Meltzer.
[B] Platinum, diamonds, sapphires, and a black pearl make up James Kaya's hand fabricated *Total Eclipse* ring. He says he draws his inspiration from infinite sources, unifying influences from traditional fine jewelry and modernism. Photo by Robert Diamante.
[C] The leaves in Holly T. Stein's *Button Garden Blue Flower Bracelet* are fabricated from metal that she roll-printed with fabric. Vintage glass buttons serve as focal points. Stein says she likes incorporating common and recycled materials, elevating objects perceived as refuse into art. 1½ x 2¾ x 2 in. (38 x 70 x 51 mm).
[D] *Eucalyptus Cuff Bracelet* is part of a collection by Michael Michaud of Four Seasons Design Group. He made the piece from bronze, using lost wax casting and hand-patination techniques. In his work, he focuses on capturing the exquisite detail of nature. Photo by Terri Ann Heiman.
[E] Sadie Shuping Wang's *Red and White Fruit Stick Brooch* is fabricated of sterling silver and resin. She says she enjoys the challenge of creating

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objects that are meaningful in our culture. 5¾ x 2½ x ½ in. (14.6 x 6.4 x 1.3 cm). Photo by Azad Photo Inc.
[F] *Faux Reflection*, by Jill K. Baker Gower, is etched and fabricated of Argentium sterling silver, NuGold, acrylic mirror, and faux fur. Her work combines historical influences with contemporary ideas on beauty. She says her use of mirrors references our obsession with appearance. 10 x 1½ x 1¼ in. (25.4 x 3.8 x 3.2 cm).

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To contact the featured artists, see Contacts, page 77.

[G] Made of 18k gold, 22k gold, sterling silver, fine silver, and Koroit opal, Victoria Lansford's *Contemplation Compass* pendant showcases spinning Russian filigree, wire granulation, and chasing. 1½ x ⅜ in. (38 x 9.5 mm). For a project by Lansford, see "Weave a Simple, Solder-Free Cuff," *page 61*.
[H] *Water Flower* is a cloisonné neckpiece by Lynn M. Floriano. She says she uses forms of nature in her work that "have spiritual and abstract qualities that forever fascinate" her. Here, she set the cloisonné enamel in silver, and also used beach glass, gold foils, gold wire, and freshwater pearls. The pendant is 3 x 3 x ½ in. (76 x 76 x 13 mm).
[I] Kristin Lora's *Circle Link Felt Ball* necklace is fabricated of sterling silver and raw wool. Bold shapes and forms, objects, color, and movement are her inspirations. 36 in. (91.4 cm).
[J] "I've always been a fan of Japanese watercolors and prints," says Jeffrey Lloyd Dever. "This brooch afforded me the opportunity to combine my take on Japanese aesthetics with my fascination with the natural world." Dever's *Far East* brooch is made of polymer clay, wire, and beading cable. 5½ x 2¼ x ¾ in. (14 x 5.7 x 1.9 cm). Photo by Gregory R. Staley.
[K] Janice P. Ho says of her *Satsumas*, "These pieces are an abstract tribute to my favorite variety of mandarins! Yum." Ho used a rolling mill and hydraulic

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For our guidelines, go to ***www.artjewelrymag.com/submit****, or write to*
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press when she fabricated the silver and 22k bimetal pieces. The pendant is 1 x ⅜ x ¼ in. (25.5 x 22 x 6.5 mm). Photo by Bill Lemke.

[L] To make the focal piece in *Bone Fish Bracelet*, metal clay artist Cindy Miller used a cast of a carved bone specimen. "I am a designer and an archaeologist, so many of my jewelry designs include fossil themes or ancient symbols," she says. The focal fish piece is 2¼ x ¾ in. (57 x 19 mm).

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To contact the featured artists, see Contacts, **page 77.**

beginner

metal wirework

ENTRY-LEVEL EAR WIRES

Whip Up Latch-Back Earrings in 30 Minutes or Less

A quick, classic technique every wireworker should know.

by Leanne Elliott Soden

Made of wire and thin metal disks, these 1 3/8-in. (35 mm)-long earrings are lightweight and comfortable to wear.

The first time I saw a pair of earrings with latch-back ear wires, I couldn't wait to get home and grab my pliers to make a pair of my own. A bit of experimenting, and I was hooked. I've made dozens of pairs since. The stacked combinations of gemstones, pearls, and metal disks freely spin, giving the earrings a pinwheel effect.

I'll show you my technique for making these simple latch-back earrings. You can either purchase premade metal disks, or cut your own from metal sheet, using a disk cutter. To keep things easy, I make the holes in the center of my disks with hole-punch pliers. Basic wireworking skills take care of the rest.

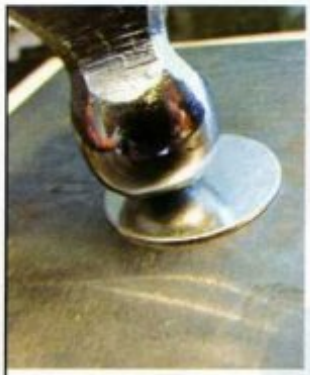
Pinwheel disks

You'll need two large and two small metal disks for this project. For the two large disks, I cut out my own 19 mm (¾-in.) disks. I textured them and punched a hole in them, too. But I purchased the two small disks, which are about 13 mm (½ in.) in diameter, and they came already textured and drilled. Make or buy disks as desired, and use disks in the sizes that make sense for your design.

Use a fine-tip marker to make a dot at the center of each large disk.

Using hole-punch pliers, make a 1 mm hole through each disk at the mark. Or, place the disks on a bench block, and use a center punch to dimple each mark. Then use a flex shaft with a 1 mm drill bit to drill a hole through each disk.

Use a flat file to remove any burs around each punched or drilled hole.



Place the disks on a bench block. Use the round face of a ball-peen hammer to texturize the disks.

I created a pattern by repeatedly striking my disk with my hammer, making even, overlapping blows.

File the edges of the disks smooth with a hand file. If you didn't purchase your small disks, make two smaller disks as desired.

Videos & Basics

Check out these bonus tutorials for fundamental techniques used in this project:

- Using a disk cutter
- Drilling

Basics, *page 71*
Videos, www.artjewelrymag.com/videos

materials

- Sterling silver sheet: 24-gauge (0.5 mm), dead-soft, 1 x 2 in. (25.5 x 51 mm); or 2 sterling silver disks: ¾-in. (19 mm) diameter
- 2 sterling silver (or other material) flat disks: 24-gauge (0.5 mm), ½-in. (13 mm) diameter, drilled front to back
- Sterling silver wire: 20-gauge (0.8 mm), round, half-hard, 8 in. (20.3 cm)
- 2 beads: 2 mm, with holes large enough to fit 20-gauge (0.8 mm) wire

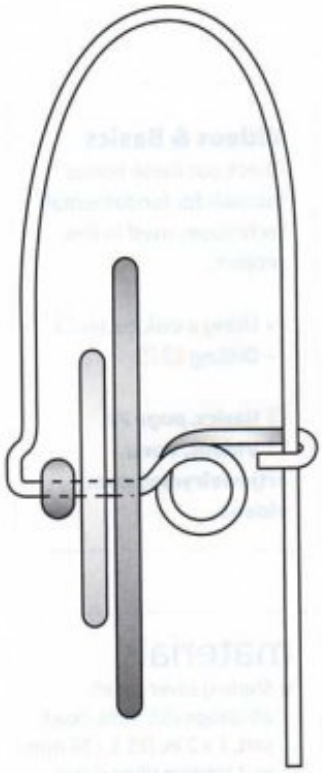
toolboxes, *page 73*

- Wirework

additional tools & supplies

- Disk cutters: large, small (optional)
- Fine-tip marker
- Hole-punch pliers; or center punch, flex shaft, 1 mm drill bit
- Flex shaft, cup bur, lubricant (optional)

See Suppliers, *page 77*
See Safety Basics, *page 74*



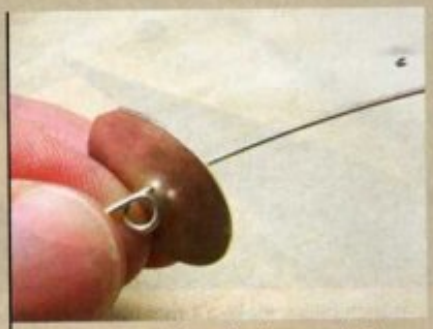
▲ A side view shows the earring assembly: One wire is bent and shaped to make the integrated ear wire with a latch-back clasp.

Pinwheel assembly

Use wire cutters to cut a 4-in. (10.2 cm) piece of 20-gauge (0.8 mm) sterling silver wire. Using a fine-tip marker, mark the wire 10 mm (⅜ in.) from one end.

Use roundnose pliers to grasp the wire at its mark. Don't grip too hard, or you'll mar the wire. Using your fingers, wrap the wire around one jaw of the pliers, forming a loop.

Using 400-grit sandpaper, smooth and round the wire end closest to the loop. You could also use a flex shaft with a lubricated cup bur attachment for this.



Add a large disk to the long end of the wire. The back of the disk should face the loop.

Add a small texturized metal disk and a 2 mm bead.

Repeat the pinwheel assembly steps to make another pinwheel.

pinwheel variations

Instead of using metal disks for the earrings' pinwheel components, try combining other drilled, flat objects like the ones listed here.

- Stone
- Lucite
- Glass
- Seashells
- Vintage buttons
- Wood
- Crystal

Latch-back ear wires

You need to make only a few simple bends to create the ear wire and its catch (see illustration, *opposite*).

Position the disks and bead against the loop. Use chainnose pliers to grasp the working wire in front of the bead.

Using chainnose pliers, make a series of three tight 90° bends in the working wire in front of the bead.

The working wire should be perpendicular to the looped wire at the back of the earring assembly.

Process photos by Leanna Elliott Soden.

Measure and mark the working wire 10 mm (⅜ in.) from the outer edge of the large disk. Position the mark perpendicular to a 10 mm mandrel, such as a wooden dowel or the barrel of a pen.

Use the thumb of your nondominant hand to hold the working wire against the mandrel so the wire and mandrel won't twist or spin. Use your other hand to bend the working wire over the mandrel. Make sure that the working wire lines up with the loop at the back of the large disk.

Using roundnose pliers, grasp the short, looped wire approximately 4 mm (5/32 in.) from its end.

Rotate the pliers to make a U bend in the short wire. The wire's end should point toward the back of the earring assembly. This is the catch for your ear wire.

Press the ear wire into the catch. Use flush cutters to trim the excess ear wire approximately 10–15 mm (⅜–9/16 in.) below the catch.

Smooth the end of the ear wire with 400-grit sandpaper or with a flex shaft and a lubricated cup bur attachment. Repeat to make the second latch-back ear wire.

PATIENCE, PLANNING, AND PRECISION

Learn Secrets of Masterful Wire wrapping

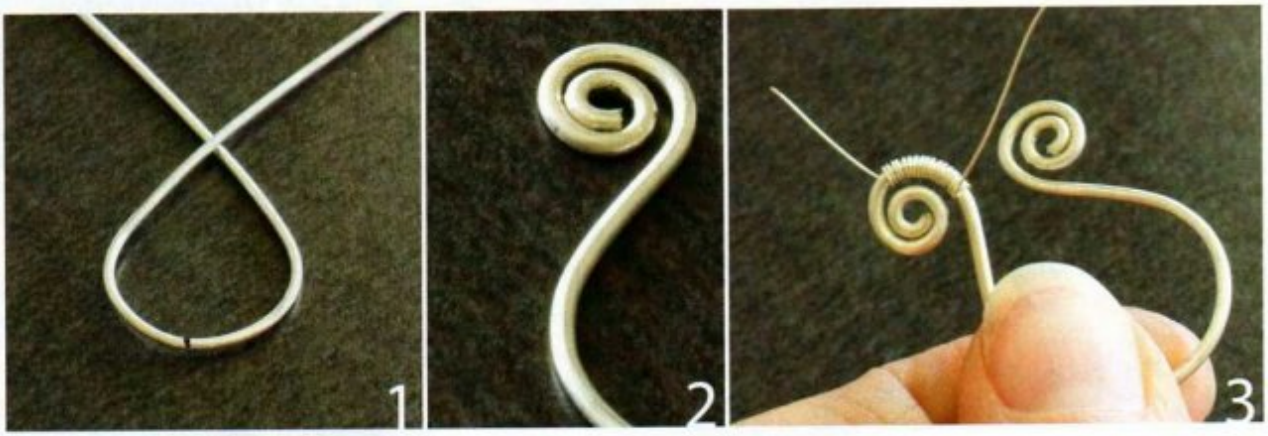
You'll need plenty of patience, but few tools, to make this dainty pearl-and-wire pendant.

by Erin Paton

You'd think that coiling a thin wire repeatedly around a thicker wire wouldn't be too hard, right? Essentially, you're right — the individual skills needed to make this pendant aren't especially difficult. But putting those skills together, anticipating problems, and carefully planning tiny details, such as where to connect components while maintaining balance, how to seamlessly attach a bail, and hiding myriad loose wire tails, are what push this wire-wrapped pendant into the advanced skill category.

If you're new to wire wrapping, I recommend practicing with scrap copper wire or craft wire first. Your wrapping tension will be the most important factor in maintaining the fluid look of this pendant; your wraps shouldn't be too tightly packed together, nor spaced out so far that gaps are visible. Meticulous attention to small details like this is what will set your work far above that of the casual wire wrapper.

This delicate pendant is only 1 7/16 x 1 in. (37 x 25.5 mm). Check out *page 58* to see it in true-to-life size.



Part 1: Large frame

When a project has as many close-fitting components as this one does, precision measuring is key. For this reason, the only measurements listed are the exact metric units that I used to make my pendant. For best results, use a slide gauge or calipers to measure your wire as you work.

Making the frame

Form the large frame. Using flush cutters, cut a 12.5 cm piece of 16-gauge (1.3 mm) wire. Using a permanent marker, mark the midpoint (6.25 cm) of the wire.

Place the midpoint of the wire against a ring mandrel at U.S. size 7 (17.3 mm diameter). (If you don't have a graduated ring mandrel, you can use a dowel of the same diameter.)

Use your fingers to bend the sides of the wire around the mandrel. Stop when you have a teardrop shape that measures approximately 24 mm from the bottom of the curve to where the wires cross **[1]**.

Spiral the wire ends. Using roundnose pliers, create a small loop on one wire end. Make sure that this loop curves toward the outside of the frame.

> **TIP:** To start a spiral, I make a small loop with roundnose pliers. Then, using flush cutters, I trim about 1 mm off the end of the looped wire to get rid of the tiny bit of straight wire that the pliers couldn't quite bend. This way, the resulting spiral is round instead of oblong.

Use chainnose or flatnose pliers to grasp across the loop. Holding the loop at the back of the pliers for the best leverage, use your fingers to push the wire around the loop to form a spiral. This is thick wire, so you'll need a bit of elbow grease!

The first one-and-a-half rotations of the spiral should be tight (the wire should be touching). For the next half-rotation, leave a small gap to allow room for wire wrapping. There should be two full rotations to the spiral **[2]**.

Spiral the other wire end in the opposite direction. Place the frame back on the ring mandrel to reshape it. If necessary, you can also use nylon-jaw pliers to adjust the spirals and frame.

Foundation wraps

Wrap the left side of the frame. Cut a 60 cm piece of 28-gauge (0.32 mm) wrapping wire. Use your fingers to gently angle one of the frame's spirals toward you and the other spiral away from you, much like opening a jump ring, to give yourself some wrapping room. This will keep the shape of the teardrop better than if you were to pull the spirals apart.

Leaving about a 10 mm tail and starting at the top of the left spiral, begin to wrap the 28-gauge (0.32 mm) wire around the frame, using overhand wraps **[3]**.

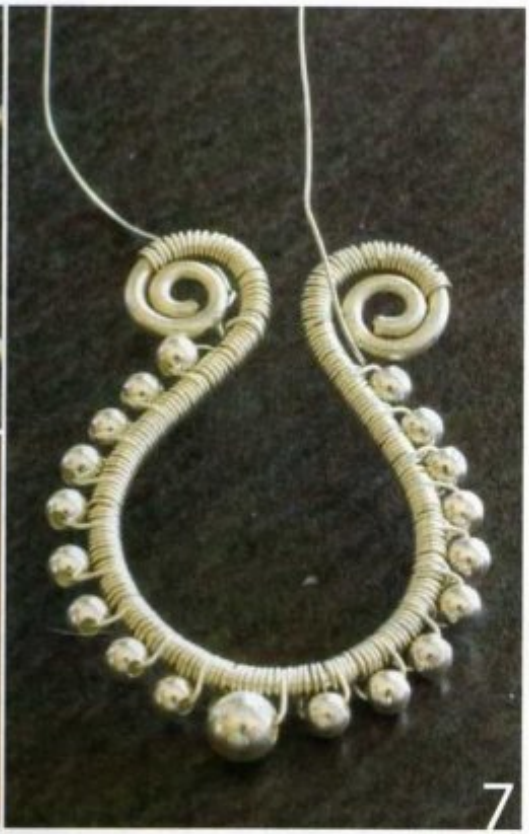
NOTE: Don't wrap too tightly at this stage; there should be some gaps between your foundation wraps, because you'll need a bit of room for subsequent layers of overwrapping. This way, the overwrapping wire will essentially disappear into the design, rather than sit on top of these foundation wraps. See "Overwrapping Tips," *left*.

overwrapping tips

The technique of overwrapping starts with a thick base wire that is wrapped with thin decorative wire. Other elements are then attached to the base wire with more wraps of identical thin wire; the key to a fluid overwrapped look is to hide the second layer of wraps between the wraps in the first layer (called "foundation wraps").

When you're overwrapping, it's important to space the foundation wraps loosely enough that the second layer can disappear into them. However, the foundation wraps shouldn't be so loose that the finished piece has visible spaces.

It's important to keep the overwrapping wraps aligned with the foundation wraps. Sometimes, you may have to use a little force to push your second layer of wraps between the first layer of wraps. The correct tension of the foundation layer of wraps can only be discovered through trial and error. I suggest practicing with copper or craft wire first.



Once you've wrapped about 5 mm of the frame, stop and push the wraps up along the frame so they slide into the gap you left in the spiral. Push the wraps to the point where the frame wire meets itself.

Trim the wrapping-wire tails. Continue to wrap the frame until you reach the end of your wrapping wire. Position both tails of the wrapping wire toward the back of the frame, and trim them with flush cutters. Then use bentnose pliers to flatten the tails against the frame.

Wrap the right side of the frame. Cut a 55 cm piece of 28-gauge (0.32 mm) wrapping wire. Begin wrapping the right side of the frame as you did the left side, but make underhand wraps instead. Again, after wrapping 5 mm of the frame, push the wraps up into the spiral.

Continue wrapping until you reach the left-side wraps. Trim both tails of the right-side wrapping wire, and use bentnose pliers to flatten them against the back of the frame.

Gently bend the two sides of the frame back in line and make sure the frame is flat again **[4]**.

Bead embellishment

Secure the embellishment wire. Cut a 40 cm piece of 28-gauge (0.32 mm) wrapping wire. Reserving a 40 mm tail, make three wraps around the frame at the top of the frame's U shape, just below the left spiral. You want the wire to disappear into the spaces between the foundation wraps that are already there.

Add the first set of beads. With your wrapping wire pointing away from the frame, slide one 2.5 mm bead down the wrapping wire until the bead sits snug against the frame. Holding the bead in place, wrap twice around the frame, making sure the wraps fall between the foundation wraps.

NOTE: It's important to make at least two wraps between each bead so that the beads don't shift out of position.

Slide another 2.5 mm bead onto the wrapping wire **[5]**, and continue adding a bead, wrapping twice, and adding a bead until you've added nine 2.5 mm beads. You should be near the bottom of the frame.

TIP: There's a trick to getting your beads to lie correctly on a wire frame: Before adding each bead, use flatnose pliers to make a 90° bend in the wrapping wire so that the wrapping wire parallels the frame **[6]**.

Add the remaining beads. At the center, bottom of the frame, add a 4 mm bead. Wrap twice to secure it, and then continue wrapping to add another nine 2.5 mm beads up the right side.

End the wrapping wire. When all the beads are attached **[7]**, wrap three times around the frame, hiding the wraps between the foundation wraps on the spiral. Use flush cutters to trim the working end of the wrapping wire at the back of the frame. *Do not trim the beginning tail of the wrapping wire.* Hide the wire end amid the wraps by flattening it with bentnose pliers.

materials

- Sterling silver, round, dead-soft wire:
  - 16-gauge (1.3 mm), 12.5 cm
  - 22-gauge (0.6 mm), 56 mm
  - 28-gauge (0.32 mm), 2.5 m
- Sterling silver beads, seamless:
  - 18 round beads: 2.5 mm
  - 1 round bead: 4 mm
  - 3 round beads: 2 mm
  - 1 round or oval bead, rice pearl, or rondelle: 3 mm
- 1 coin pearl or other coin-shaped bead: 13 mm
- 1 soldered jump ring (round or oval): 20-gauge (0.8 mm), 3 mm inside diameter
- 1 split ring: sized to fit chain (optional)
- Chain
- Clasp

toolbox, *page 73*

- Wirework

additional tools & supplies

- Slide gauge or calipers (optional)
- Permanent marker
- Pliers: bentnose
- Liver of sulfur or other patina (optional)
- Fine-tip paintbrush (optional)

See Suppliers, *page 77*
See Safety Basics, *page 74*

Videos & Basics

Check out these bonus tutorials for fundamental techniques used in this project:

- Making a wire spiral
- Opening and closing a jump ring
- Liver of sulfur patina

Basics, *page 71*
Videos, www.artjewelrymag.com/videos

Part 2: Small frame

Make the small frame. Cut a 56 mm piece of 22-gauge (0.6 mm) wire.

Wrap the wire around the ring mandrel at U.S. size 3 (14 mm diameter). Using fine roundnose pliers, create a small loop at each end. The loops should face toward the outside of the frame. Use flatnose pliers to flatten the loops, if needed.

Check the fit. Lay the small frame inside the large frame to make sure it fits well **[1]**. Remove the small frame from the large frame and reshape, trim, or remake the frame if necessary.

Harden the small frame. Because the small frame is made of thin wire, you'll need to harden it to make it stronger. Using an anvil or bench block and the flat side of a chasing hammer, gently hammer the small frame. After hammering, reshape the frame on the mandrel, if required.

Wrap the small frame. Cut a 40 cm piece of 28-gauge (0.32 mm) wrapping wire. Leaving a short tail and starting on the left side, about 1 mm away from the left loop, wrap the small frame loosely, just like with the foundation wraps on the large frame.

Trim the short tail on the left side; *do not trim the longer wrapping wire on the right side* **[2]**. Adjust the frame so the ends are nearly touching.

Actual size

Part 3: Coin pearl

Secure the attachment wire. Cut a 20 cm piece of 28-gauge (0.32 mm) wrapping wire. Leaving a 40 mm tail at the small frame's left loop, wrap three times to fill the space you left unwrapped in the previous step. The wrapping wire should now be at the back of the frame, pointing downward.

Attach a coin pearl. Thread the wrapping wire through a coin pearl. The wire should exit the pearl at the back of the frame, a little to the right of the center, bottom of the frame **[1]**. Wrap three times around the frame, wrapping toward the right loop, making sure the new wraps disappear into the existing wraps.

Stabilize the coin pearl. You need to stabilize the pearl to prevent it from turning in the frame. To do this, bring the wrapping wire behind the pearl to the left side of the frame (right in photo **[2]**, since the frame is shown from the back).

Position the wire about 5 mm from the top of the frame, and thread the wire between the pearl and the frame. Wrap around the frame twice, hiding the wraps between the existing wraps.

Take the wrapping wire across the back of the pearl to the opposite side of the frame, and wrap twice. Trim the wrapping wire, and hide the end in the existing wraps. Do not trim the tails of the other wrapping wires.

Part 4: Assembly

Align the components. Using your marker, mark the midpoint on the center, bottom of both frames. With the front of both frames facing up, place the small frame inside the large frame, matching up the two midpoint marks.

Connect the frames at the top. With both frames centered, locate the wire tail at the top, left of the small frame and make sure the tail is facing the back of the frames.

Thread a 2 mm bead onto the tail, and wrap the tail around the large frame two or three times, wrapping in the direction of the frame's spiral. Wrap under the beads if necessary **[1]**. *Do not trim the tail.*

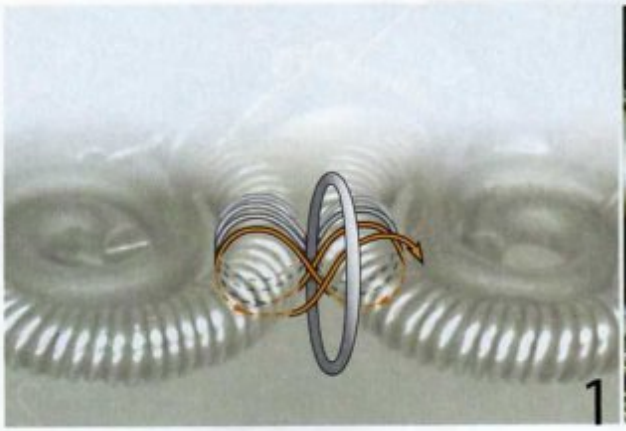
Connect the other side of the frames in the same manner, but trim the end of this wrapping wire and flatten the end between foundation wraps.

Connect the frames at the bottom. Cut a 12 cm piece of 28-gauge (0.32 mm) wrapping wire. Leaving a short tail, wrap two to three times around the large frame near its midpoint mark **[2]**.

Thread the wrapping wire between the coin pearl and the small frame, and wrap around the small frame three times, hiding the wraps between the existing wraps. Trim both ends of this wire and flatten them between the foundation wraps.

Add a decorative center bead. There should be one remaining wire tail left over from joining the top, left sides of the frames.

String a 3 mm bead onto the tail, and bring the wire across the back of the assembly to the other side of the large frame. Anchor the wire by wrapping two to three times around the large frame; wrap toward the spiral, and hide the new wraps between the foundation wraps. Trim the wire tail and flatten the end, hiding it in the wraps **[3]**.



Process photos by Erin Paton.

Part 5: Finishing

Bail

Secure the wire for the bail. Cut a 20 cm piece of 28-gauge (0.32 mm) wrapping wire. Leaving a small tail and starting under the left spiral (just below where the edges of the two spirals meet), wrap around the large frame two to three times to anchor the wire.

Join the spirals. Beginning just above the 3 mm accent bead, join the two sides of the large frame by wrapping in a figure-8 motion from one side of the frame to the other four times. The wraps should be snug and lie close together, progressing up toward the top of the spirals until you reach the point where you'd like to attach the jump ring that will serve as the bail.

NOTE: If there isn't enough room between your foundation wraps, these wraps may rest on top of the foundation wraps; make sure to keep the wraps neat and even.

Add the bail ring. Thread a soldered jump ring onto the wrapping wire. Hold the jump ring vertically between the two spirals and on top of the existing figure-8 wraps. Anchor the jump ring in place by continuing to wrap in a figure-8 motion through the bottom half of the jump ring three times **[1]**.

Finish off the wire for the bail. To finish the figure-8 wraps, wrap around the left spiral, extending toward the front of the pendant. Thread a 2 mm bead onto the wire, and wrap across the front of the pendant to the right spiral, so that the bead lies just below the jump ring bail. Wrap around the right spiral two to three times. Trim the wire, flatten it down, and hide the end in the existing wraps **[2]**.

online extra

You'll use a ring mandrel in this project to make sure your wire frames are a standard size. If you don't have a ring mandrel, you could use dowels in equivalent sizes. For a chart of U.S., U.K., and metric ring sizes, visit www.artjewelrymag.com/reference.

Patinating and finishing

Clean up the pendant. Using fine steel wool or fine-grit sandpaper, remove any visible pen marks or blemishes. Make sure not to scratch the pearl or beads with the abrasives.

NOTE: You may want to position your thumb over the pearl to avoid accidentally scratching it as you work with the steel wool or sandpaper.

Select a chain. If your chain is thin, you can thread it directly through the jump ring bail, then add a clasp. If your chain is larger, you'll need to add a split-ring to the jump ring bail, and thread your larger chain through that instead.

Patinate the pendant, if desired. If you'd like to enhance the contrast of the wrapped-wire textures, you can add a patina. Mix a solution of liver of sulfur or other darkening patina according to the manufacturer's instructions.

Using a fine-tip paintbrush and avoiding the pearl, apply the patina to the wire of your pendant. (You can also apply patina to your chain if you'd like.)

online extra

Subscribers, Erin Paton will teach you how to make a decorative hook clasp like the one featured on this necklace. To download your free project, visit www.artjewelrymag.com/projects.

TIP: Avoid dunking jewelry with delicate embellishments, such as pearls or porous stones, in patina solution. Carefully apply solution with a paintbrush to avoid potentially ruining your stones or beads. (If you do get patina on your pearl, rinse it immediately and it should be fine.)

Lightly rub fine steel wool over the metal to remove the patina from the raised portions of the pendant. Again, make sure not to scratch your pearl or beads. Use a polishing pad or cloth to lightly polish and shine the pendant.

TEXTILE TECHNIQUES

Weave a SIMPLE, SOLDER-FREE Cuff

Basketry techniques give form *and* depth *to a sheet of patterned sterling silver.*

by Victoria Lansford

With a width of 1½ in. (38 mm), this bold cuff is sure to get lots of attention.

This hand-wrought cuff is based on the most basic weaving pattern. To translate a textile technique to metal, I used a pierced sheet of sterling silver as my warp and flattened wire for my weft. (For definitions, see "Warp vs. Weft," *page 62.*)

For contrast, I paired patterned metal sheet with plain fine-silver wire. (Fine-silver wire is perfect for weaving because it's soft.)

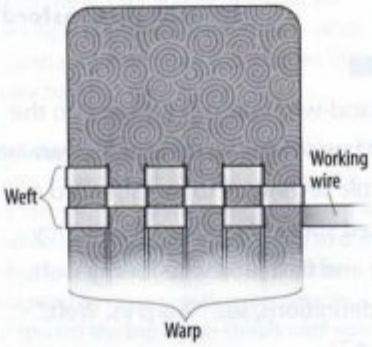
I bought the patterned sheet, but you could easily create your own using a rolling mill. I used one to make my own weft (wire); I flattened round fine-silver wire. If you'd rather skip the rolling mill, you could buy fine-silver bezel wire instead.

After the cuff is woven, you can shape and patinate it in just a few simple steps.

warp vs. weft

If you picture a textile loom, the warp threads are the ones held in place, while the weft thread runs back and forth through them. The word "warp" comes from an Old English word meaning "that which is thrown across," while "weft" originated as "that which is woven."

The warp threads generally run lengthwise in a piece of cloth, and the weft runs across from side to side. In this project, the warp is the cuff blank and the weft is the flat fine-silver wire that is woven through the slits in the cuff.

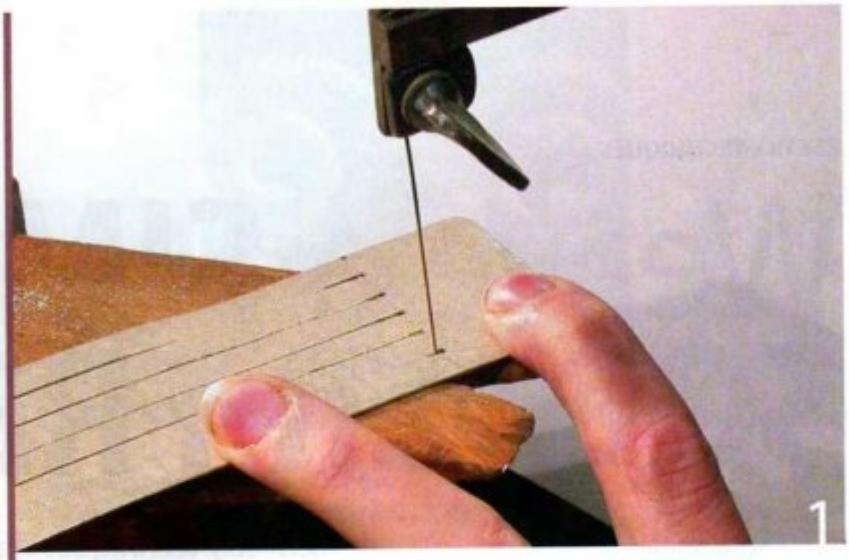


Videos & Basics

Check out these bonus tutorials for fundamental techniques used in this project:

- Basic sawing B V
- Drilling B V
- Piercing B V
- Using a rolling mill V (optional)
- Roll-printing metal with a rolling mill V (optional)
- Annealing B V
- Patinating with liver of sulfur B V (optional)
- Tumble-polishing B (optional)

B Basics, *page 71*
V Videos, www.artjewelrymag.com/videos



PART 1: Warp (sheet)

Cut out a cuff blank. Using a paper template, determine the size of your cuff. It should be long enough to fit comfortably around your wrist, with a ¾–1-in. (19–25.5 mm) gap.

Using a jeweler's saw and a #3 blade B V, cut out a 1½-in. (38 mm)-wide strip of patterned metal sheet to that length. (Mine is 5½ in./14 cm long.)

Refine the cuff blank. File the edges of the cuff blank straight; file the corners so they are slightly rounded. Using a burnisher, burnish the edges to smooth them and remove any file marks.

Using a scouring pad or fine-grit sandpaper, rub the unpatterned side of the cuff blank in a circular motion to disguise scratches and help you avoid extra cleanup later.

Draw the warp lines. Using a scribe or a pair of dividers on the unpatterned side of the cuff blank, draw five parallel lines lengthwise down the cuff blank. The lines should begin and end 1 in. (25.5 mm) away from the ends and should be ¼ in. (6.5 mm) apart.

online extra
To learn how to use a rolling mill to create a custom texture on metal sheet, visit www.artjewelrymag.com/videos.

Drill holes for a saw blade. Use a center punch to make a dimple at one end of each line. Using a #70 (0.7 mm) drill bit in a flex shaft, drill through each dimple B V. Make sure the holes are large enough to accommodate a #3 saw blade.

Pierce the warp lines B V. Thread a #3 saw blade through one of the drilled holes, and saw along the inscribed line. Remove the saw blade. Repeat to saw the remaining lines **[1]**.

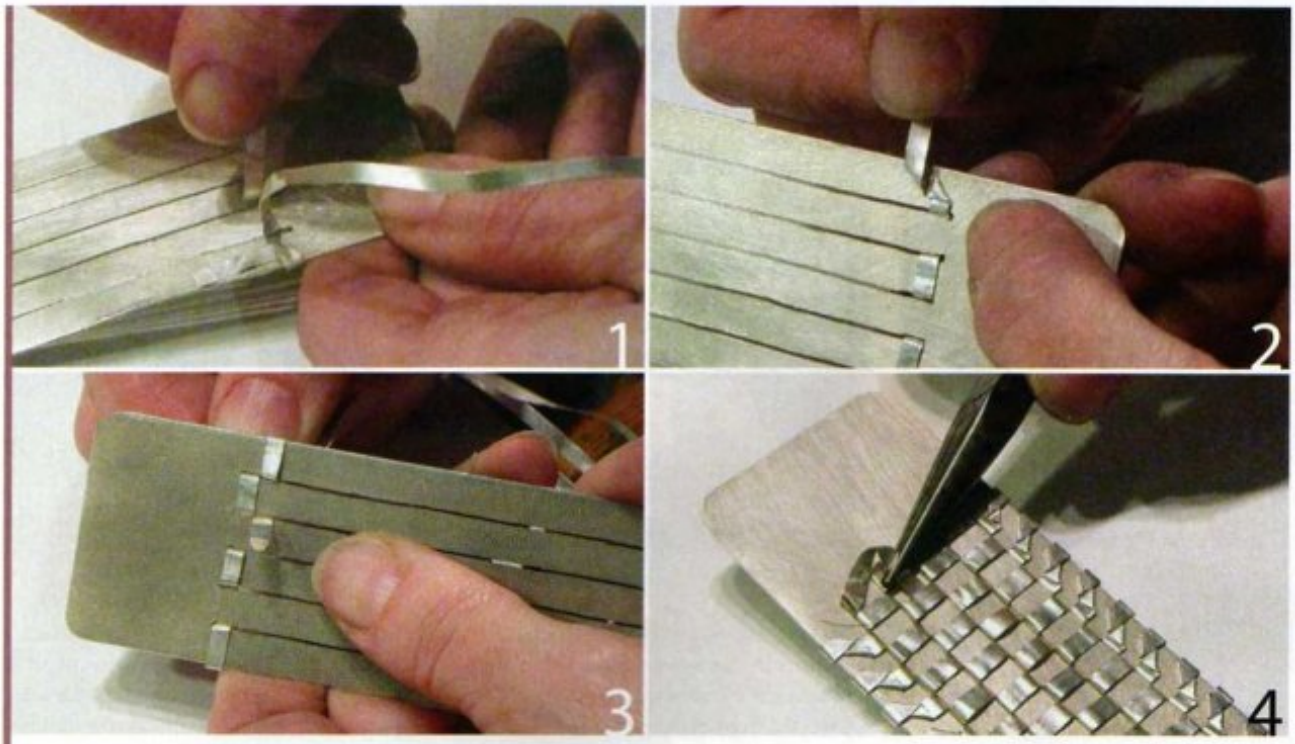
PART 2: Weft (wire)

NOTE: If you don't have access to a rolling mill, skip this part and use fine-silver bezel wire instead. To substitute for the flattened wire, use bezel wire that is 30 gauge (0.26 mm) and approximately 3 mm (⅛ in.) wide.

Flatten round wire. If you're using round wire, you'll need to flatten it first. Run 4 ft. (1.2 m) of round fine-silver wire through a rolling mill V several times, tightening the rollers a little with each pass, until the wire is about 22 gauge (0.6 mm) thick.

Coil the wire into a tight bundle and anneal it B V. To avoid melting the wire, heat the coil slowly and remove the heat as soon as the wire is annealed.

Continue rolling the annealed wire until it is 30 gauge (0.26 mm) thick. Coil and anneal the wire once again before weaving with it.



PART 3: Weaving

Secure the beginning of the wire. Uncoil the wire and make a 90° bend in it about 1 in. (25.5 mm) from one end. Position this bent end at the back (unpatterned side) of the cuff blank, near the ends of the slits **[Figure 1, A]**.

Using your thumb, hold the bent end along the length of the cuff blank, between the edge of the metal and the first slit. (This bent end will be covered up and secured by future rows of weaving.)

Weave the first row. Wrap the working end of the wire around the edge of the cuff blank to the front (patterned side) and through the first slit. Pull tight.

Continue weaving in and out of the slits **[1]** until you reach the opposite edge. Make sure not to twist the wire.

NOTE: If you have trouble getting the wire to lay smooth, gently flatten it by compressing it with flatnose pliers.

Turn the wire for the next row. The wire should now be at the back of the cuff, perpendicular to the slits. Bend the wire 90° **[Figure 1, B]**, so it's parallel to the slits.

Place your thumb over this first bend, and bend the wire 90° again **[Figure 2, A]** so it's perpendicular to the slits. Your wire will now be staggered down one from the first row of weaving **[2]**. Gently but firmly compress this bend against the cuff blank, using flatnose pliers.

Weave the rest of the cuff blank. Wrap the wire over the edge of the cuff blank to the front, and thread it through the nearest slit. Continue weaving **[3]** to complete the second row.

When you come to the end of the second row, repeat the turn maneuver. Continue weaving and turning until you have woven the entire cuff blank.

Secure the wire. Trim the wire to ¼ in. (19 mm). Using chainnose pliers, slide the wire tail perpendicularly under the woven wire between the second and third slits **[4]**. Pull the tail tight, making a 90° bend. Using flatnose pliers, gently but firmly compress this bend, and make sure the tail is tucked under securely.

NOTE: If you run out of wire as you're weaving, secure the wire tail as described above. Then secure the end of a new wire on the back of the cuff blank under a few sections of weaving, and continue.

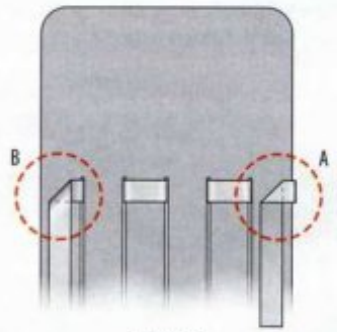


Figure 1

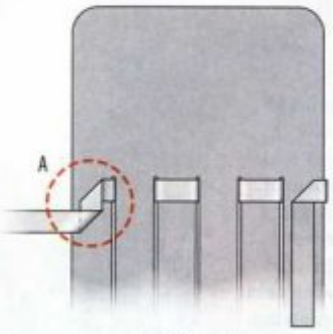


Figure 2

materials

- Sterling silver sheet: 20-gauge (0.8 mm), patterned, dead-soft, 1½ x 5½ in. (38 x 140 mm) or longer
- Wire (choose from):
  - Fine-silver wire: 14-gauge (1.6 mm), round, dead-soft, 4 ft. (1.2 m), to be flattened with a rolling mill
  - Fine-silver bezel wire: 30-gauge (0.26 mm), plain, dead-soft, 3 mm (⅛ in.) wide, about 4 yd. (3.7 m)

toolboxes, *page 73*

- Sawing/piercing
- Soldering
- Finishing

additional tools & supplies

- Rolling mill (optional)
- Wire cutters
- Pliers:
  - Chainnose, flatnose
  - Curved nylon bracelet-forming, or half round (optional)
- Mallet: rawhide or plastic
- Bracelet bender or bracelet mandrel

See Suppliers, *page 77*
See Safety Basics, *page 74*

▶ **A series of small bends at the end of each row (hidden at the back of the cuff, *above*) shifts the wire over for the next row of weaving.**

Process photos by Victoria Lansford.

PART 4: Finishing

Burnish the woven wire. Using an agate or metal burnisher, rub the wire on the front of the cuff blank **[1]**. (Rub with the direction of the wire to minimize distortion.) This will smooth out any bumps, buckles, or marks left on the wire from pliers.

Tighten the edges of the wire. Using a rawhide or plastic mallet, lightly hammer the edges of the cuff blank until the wires lie flat against the edge **[2]**. If necessary, reburnish the woven wire to smooth it.

Bend the blank into a cuff. Bend each end of the cuff blank, one at a time, to form an oval cuff. Leave an opening large enough for a wrist to slip through.

NOTE: I used a bracelet bender to form my cuff. It's a metal tool that I can bend each side of the cuff around **[3]**. Instead, you could form the cuff with your hands and a bracelet mandrel.

Using curved, nylon bracelet-forming pliers **[4]**, half-round pliers, or flatnose pliers, curve the ends of the cuff so they fit comfortably. Make any necessary final adjustments to the shape.

Patinate the cuff. Following the manufacturer's instructions, apply liver of sulfur B or Jax Silver Blackener to the cuff. This will enhance the texture of the weave and darken the patterned sheet.

Polish the cuff. Focusing on the raised wires, use a flex shaft and a muslin buff charged with polishing compound to polish the cuff; I prefer Zam compound. This will create a shiny high polish on the raised areas. Alternately, you could polish the cuff in a tumbler B with steel shot and burnishing compound. A

online extra

Confused about which drill bit and saw blade to use for piercing your metal sheet? For a handy chart, visit www.artjewelrymag.com/reference.

intermediate

metal clay
metal

SMOOTH TRANSITION

Mix it Up

Metal Clay Meets Metal Sheet

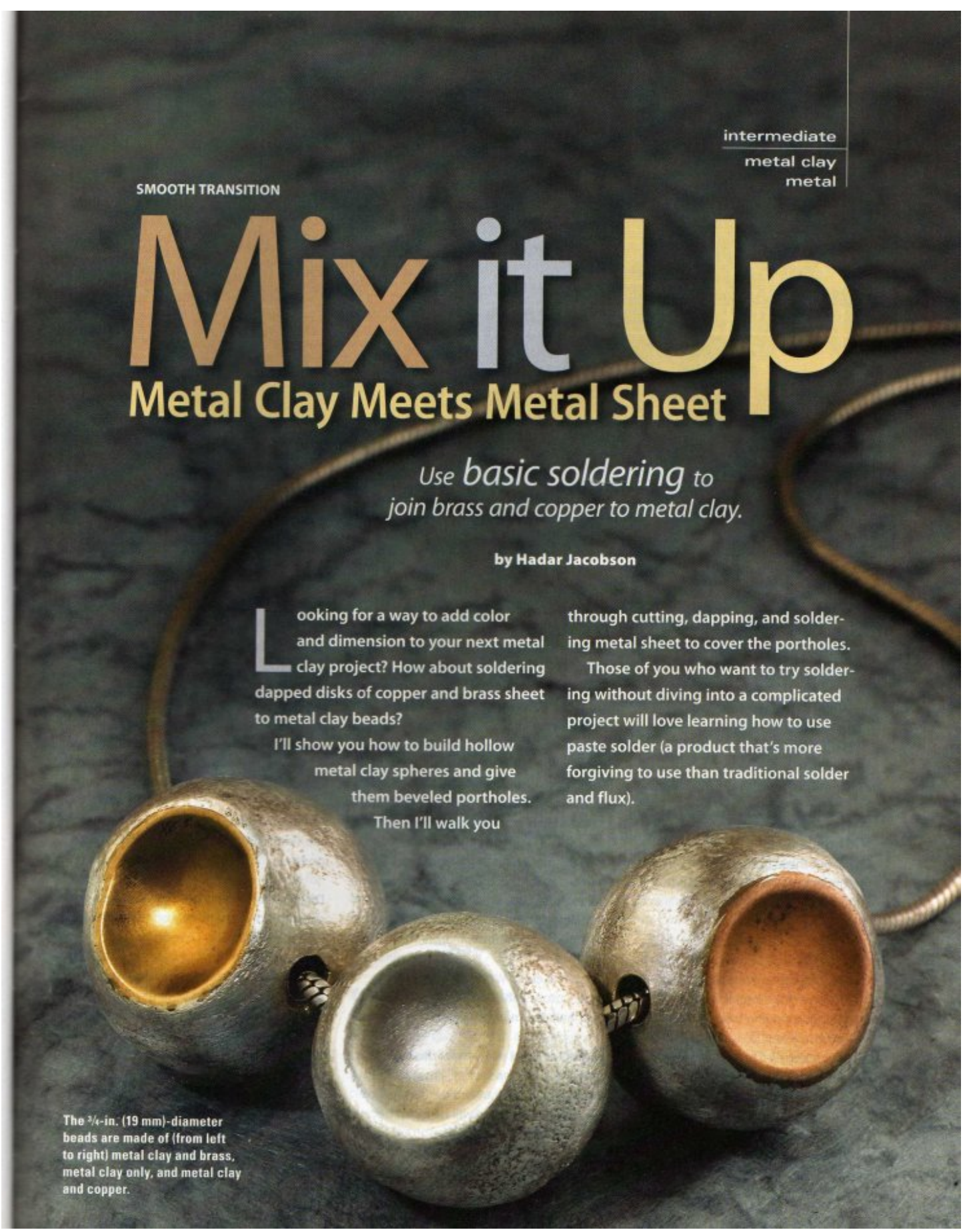
Use basic soldering to join brass and copper to metal clay.

by Hadar Jacobson

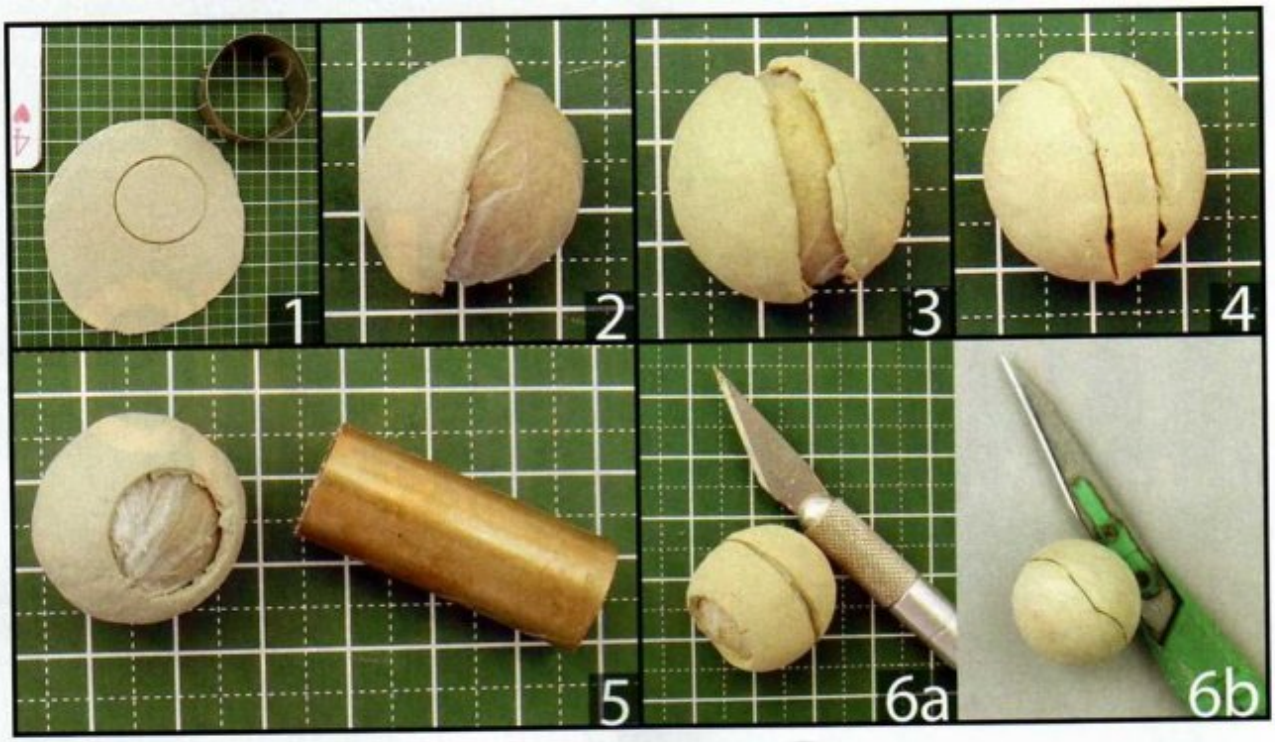
Looking for a way to add color and dimension to your next metal clay project? How about soldering dapped disks of copper and brass sheet to metal clay beads?

I'll show you how to build hollow metal clay spheres and give them beveled portholes. Then I'll walk you through cutting, dapping, and soldering metal sheet to cover the portholes.

Those of you who want to try soldering without diving into a complicated project will love learning how to use paste solder (a product that's more forgiving to use than traditional solder and flux).



The ³/₄-in. (19 mm)-diameter beads are made of (from left to right) metal clay and brass, metal clay only, and metal clay and copper.



Part 1: Metal clay spheres

Keep these items handy while you're making your spheres:

- three 5/8-in. (16 mm)-diameter marbles to use as forms
- large circle cutter, 15/16-in. (25 mm) diameter
- small circle cutter, 3/8-in. (10 mm) diameter

Videos & Basics

Check out these bonus tutorials for fundamental techniques used in this project:

- Rolling and cutting metal clay B V
- Making metal clay paste B V
- Using a disk cutter V
- Using a dapping block and punches V
- Soldering B V
- Liver of sulfur patina B V
- Annealing B V

B Basics, *page 71*
V Videos, www.artjewelrymag.com/videos

NOTE: If you use wooden marbles, like I did, cover them with plastic wrap to prevent wet metal clay from sticking to them. The clay won't stick to glass marbles.

Construction

Make a clay circle. Lightly coat your hands, a plastic roller, and a flexible Teflon sheet with olive oil. Roll about 5 g of high-shrinkage-formula metal clay to 4 playing cards thick B V. Use the large circle cutter to cut a circle from the clay sheet **[1]**.

NOTE: I use a high-shrinkage formula of metal clay for this project. In a dry, unfired state, these clays are less likely to break than low-shrinkage formulas when you remove them from the marble.

Form the clay. Without distorting the circle cutout's shape, drape and form it over half of a marble **[2]**.

Form a second clay circle. Repeat the previous two steps to roll, cut, and form another clay circle over the other half of the marble **[3]**. There will be a gap because the clay circles will not meet.

Fill the gap. Roll about 5 g of clay to 4 cards thick. Use a craft knife to cut a strip about 3/16 x 2¼ in. (5 x 57 mm) from the sheet; the strip should fit the width and length of the gap. Wrap the strip around the marble **[4]**. Wet your fingertip with water and gently blend the seams.

NOTE: Be careful to maintain the spherical shape of the form as you blend the seams. It's very difficult to correct a misshapen sphere after the clay has dried.

Cut a porthole. Avoiding the seam, use the 3/8-in. (10 mm) circle cutter to make a porthole in the sphere **[5]**.

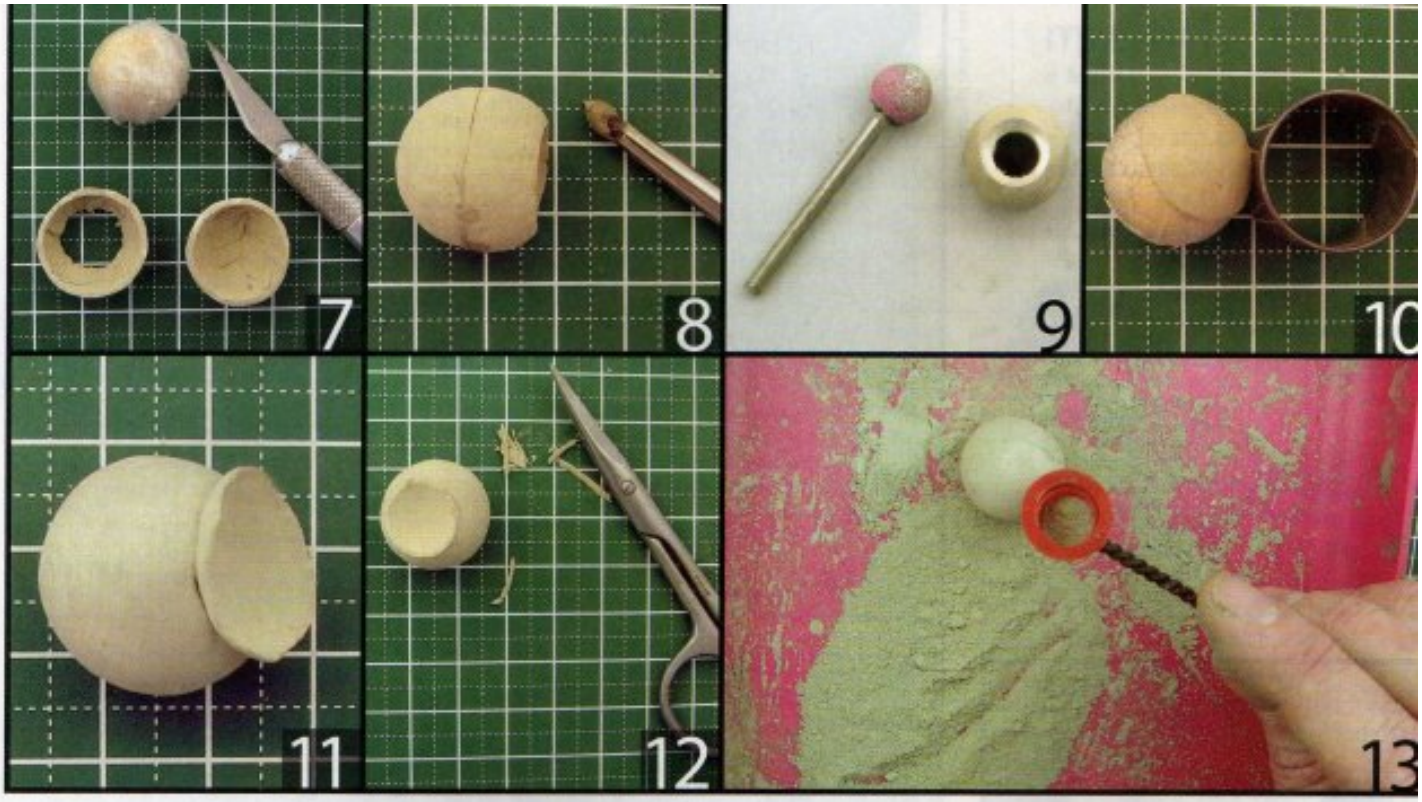
Dry and refine the sphere. Allow the sphere to dry completely on the marble. (See the "Metal Clay Dryness" chart, *opposite*.)

Use a fine-tip paintbrush and metal clay paste to fill any cracks or gaps in the joins. Allow the paste and clay to dry completely.

Use fine-grit sandpaper to remove excess paste and to smooth the joins.

Cut the sphere in half. Using a craft knife and working parallel to the porthole, cut the sphere in half **[6a]**.

NOTE: Making the cut slightly wavy **[6b]** allows you to easily refit the halves.



Remove the halves from the form. Taking care to not squeeze or break the halves, gently pull them off the marble **[7]**.

Join the halves. Using a fine-tip paintbrush, apply metal clay slip to the edges of the halves, and rejoin them **[8]**. Allow the slip to dry completely.

Apply slip to fill any gaps in the join, and again dry completely. Refine the seam with fine-grit sandpaper.

Bevel the porthole. I use a large ball-head abrasive bit to bevel the edges of the porthole **[9]**, creating an even seat for the caps. Or, you could use a half-round needle file to create the beveled edge.

NOTE: Save the dry clay filing dust to use later to add texture to the spheres.

Make two more spheres. Repeat the previous steps to make two more spheres with portholes.

Metal clay cap

I covered the porthole in one of my spheres with a metal clay cap. If you prefer to have a metal sheet cap for all of your spheres, skip ahead to texturize and fire all three spheres.

Make a cap cutout. Roll about 5 g of clay to 4 cards thick. Use a ½-in. (13 mm) circle cutter to cut a circle of clay from the sheet.

Form the cap. Place the cutout over a marble **[10]** to form the cap, and allow the clay to dry completely. Then, gently pull the cap off the marble.

Join the cap to a sphere. Use a fine-tip paintbrush to apply slip to the edge of the porthole in one sphere. Place the cap concave-side up into the slip **[11]**. Allow the slip to dry completely.

Refine the sphere. Using nail scissors, trim the excess lip of clay from the cap **[12]**. Use fine-grit sandpaper to smooth the seam.

Texturizing and firing

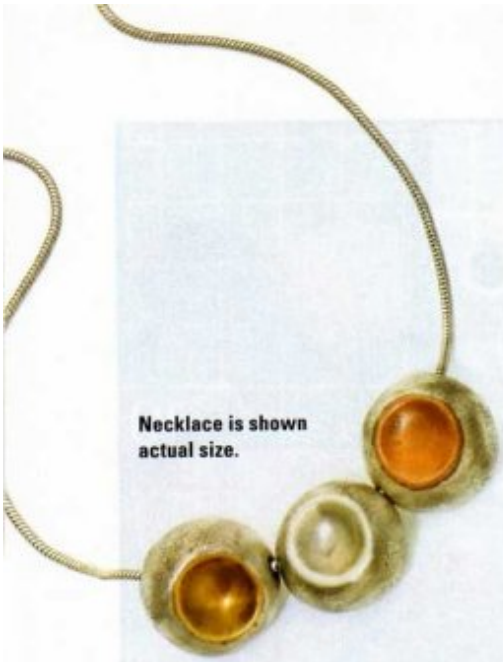
Add texture to the spheres. Place the reserved, dry clay filings in an enamel sifter. Brush distilled water over a small surface area of a sphere and sift metal clay dust onto the wet area **[13]**.

NOTE: Do not sift clay dust on the surface of the metal clay cap; the cap should remain smooth for contrast.

Metal Clay Dryness	
Wet	A lot of moisture; very pliable
Semi-dry	Some moisture; firm, holds its shape
Mostly dry	Nearly devoid of moisture; rigid
Completely dry	No moisture; can be fired

If you don't have a sifter, use your fingers. Repeat to cover the rest of this sphere and the other two spheres.

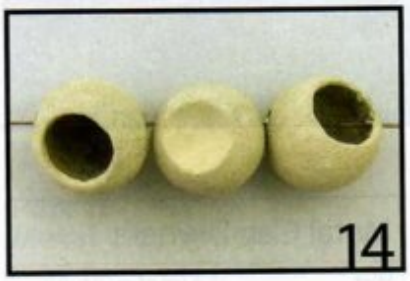
TIP: Reuse dry metal clay bits by grinding them into a powder with a coffee grinder dedicated for metal clay use. You can use the clay powder to add texture to your work or to make your own metal clay paste B.



Necklace is shown actual size.

Editor's Note tips for using a disk cutter

- Make sure you insert the punch cutting-edge down into the die plate; if you insert the punch upside down, you'll hammer on the cutting edge and ruin the punch.
- Strike the punch hard and decisively with your mallet or hammer. A hammer blow that bounces may mar your metal sheet.
- If your punch gets stuck in the die plate, position a thick wooden dowel on the cutting end of the punch and then hammer the dowel to dislodge the punch, backing it out of the die plate. —*AK*



Make holes for stringing the spheres. Use the tip of a round needle file or a small drill bit to drill holes through the spheres.

NOTE: Make the holes in the top third of the spheres to ensure that the beads will hang correctly when you string them.

Using a round needle file, enlarge the holes to fit your cord or chain; remember to factor in the clay shrinkage. Thread the spheres on a long needle to see how they will look as a group **[14]**.

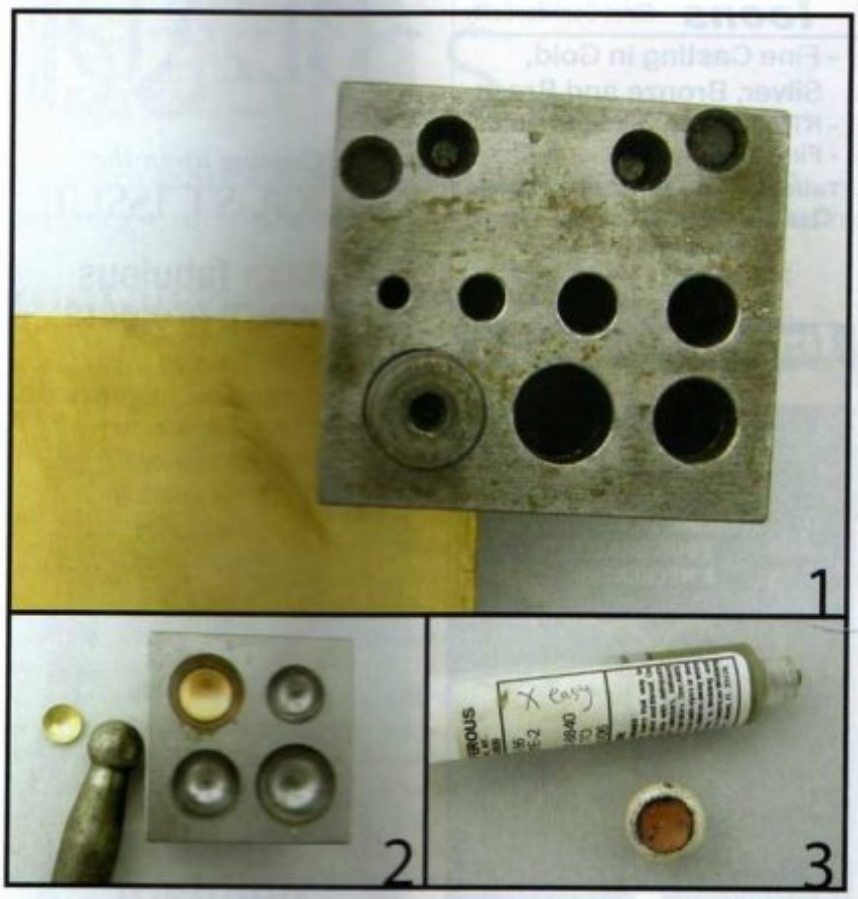
Fire. Place the spheres, porthole- and cap-side down, on a kiln shelf. Place the shelf in a kiln, and fire according to the manufacturer's instructions.

Allow the spheres to cool completely.

Prepare the spheres for soldering. Use an agate or steel burnisher to compress the metal along the beveled edges of the portholes; this reduces the porosity of the metal clay, creating a better surface for the paste solder to join to.

Editor's Note tips for using a dapping block and punches

- Keep your dapping block and dapping punches clean and polished; surface blemishes will transfer to the disk you're shaping.
- To make symmetrically dapped disks, make sure your dapping punchis centered on the metal disk and perpendicular to the block.
- If your metal disk doesn't dome easily, remove it from the block and anneal the disk to soften the metal. Once the disk is cool, you should be able to dome it. —*AK*



Process photos by Haider Jacobson.

materials

- Metal clay: 20–25 g, high-shrinkage formula
- Metal clay slip and paste
- Brass sheet: 28-gauge (0.32 mm), 2 x 2 in. (51 x 51 mm)
- Copper sheet: 28-gauge (0.32 mm), 2 x 2 in. (51 x 51 mm)
- Cord or chain

toolboxes, *page 73*

- Metal clay
- Soldering

additional tools & supplies

- 3 marbles (wood or glass): ⅝-in. (16 mm) diameter
- Circle cutters:
  - 15/16-in. (25 mm) diameter
  - ⅜-in. (10 mm) diameter
  - ½-in. (13 mm) diameter
- Flex shaft or rotary tool: ball-head abrasive bit, small drill bit (optional)
- Nail scissors
- Enamel sifter (optional)
- Disk cutter
- Heavy rawhide mallet or dead-blow hammer
- Dapping block and punches
- Paste solder: extra easy or easy
- Baking soda (optional)
- Liver of sulfur (optional)

See Suppliers, *page 77*
See Safety Basics, *page 74*

Part 2: Metal sheet accents

Cut metal sheet caps. Use a disk cutter and a heavy rawhide mallet or dead-blow hammer to cut one ½-in. (13 mm) disk from 28-gauge (0.32 mm) brass sheet, and another from 28-gauge (0.32 mm) copper sheet **[1]**. Check out "Tips for Using a Disk Cutter," *opposite above*.

Dome the caps. Dome the disks with a dapping block and punch **[2]**. See "Tips for Using a Dapping Block and Punches," *opposite*.

Apply paste solder to the spheres. Apply a line of extra easy (or easy) paste solder to the beveled edges of the open portholes.

NOTE: Paste solder is packaged in a syringe that includes flux.

Place the domed copper disk concave-side up into one porthole **[3]**. Place the domed brass disk in the other porthole.

Solder the spheres. Move the flame of your torch in a circular motion to heat one entire sphere until the solder flows. Quench the sphere in water.

Metal clay is porous, so if you pickle the spheres, you'll need to neutralize them with baking soda.

NOTE: Because easy paste solder flows at a temperature of about 1200°F (649°C), you can use a handheld butane torch to solder the caps to the spheres.

Finish. Use a flex shaft or rotary tool with 120-grit sandpaper to remove excess metal sheet from the spheres. Use progressively finer grits to smooth the edges of the solder seam flush with the sphere.

You can leave the spheres as they are, or apply a liver of sulfur patina to highlight the granular surface texture.

▲ **Soldered dots of copper and brass add color to these hollow metal clay earrings.**

basics

online extras
Look for this icon and find BONUS VIDEOS online at www.artjewelrymag.com/videos.

demonstrations and definitions of beginning jewelry-making techniques needed for projects in this issue

metalworking techniques

SAWING

To thread a saw blade, insert the blade, with the teeth of the blade facing down and away from the handle, into the top wing nut of the saw frame, and tighten the wing nut. Brace the handle in the hollow of your shoulder, and apply pressure to the saw frame against your bench pin. Maintaining pressure, insert the bottom of the saw blade into the wing nut closest to the handle **[1]**, and tighten the wing nut **[2]**.

The blade should be taut and should make a high-pitched "ping" when you pluck it with your thumbnail. If you get a dull sound, reinstall your blade while putting pressure on the saw frame. Then, lubricate the blade with beeswax.

When sawing, sit in an erect posture with the top of your workbench at upper chest level. Slouching or having your work too low causes back and wrist strain and leads to broken saw blades.

To saw, grip the saw frame loosely in your hand. Use long, smooth motions, using as much of the blade as possible. The blade will work best when it's perpendicular to the metal **[3]**. Putting excessive pressure on the saw frame will make you work harder. Turn corners by sawing in place while turning the metal; trying to turn the saw will break the blade.

DRILLING/PIERCING

Tap a center punch with a mallet to create a shallow dimple in the section of the metal you want to remove **[1]**. Place the metal on a piece of wood and drill a hole, using the dimple as a guide **[2]**.

Remove one end of the saw blade from the saw frame. Slide the blade through the hole in the metal, then reinsert the blade into the frame, and tighten. Saw out the inside section of the metal. Release one end of the blade from the saw frame so you can remove the blade from inside the metal.

SOLDERING

Clean the metal you plan to solder by sanding it with 400-grit sandpaper. Surfaces must be clean and in complete contact with each other for solder to flow; solder will not fill holes or gaps. Flux all the metal you plan to solder to prevent oxidation and to help solder flow. Heat the entire piece, not just the solder, keeping the torch moving in a circular motion.

If there is more than one solder join in a piece, solder the first one using hard solder, the second using medium solder, and the third using easy solder, as hard solder has the highest melting point and easy solder has the lowest. To keep the solder in a previous join or joins from flowing when you heat the metal again, apply an anti-flux to those areas.

During soldering, the solder will flow to where the heat is the greatest. If your solder is flowing in the wrong direction, adjust the direction of your flame.

Once the solder flows, quench the piece in water, and place it in a pickle solution to remove oxidation and flux residue. Rinse the piece in clean water.

ANNEALING

Annealing restores malleability to work-hardened metal. Place the metal on a soldering surface, flux it, and then heat it evenly with a torch. When the metal has a dull, rose-colored glow, it is annealed. Quench it in water, and soak it in pickle to remove oxides and flux. Then rinse it thoroughly.

PATINATING WITH LIVER OF SULFUR

Polish your piece before patinating. (If you tumble-polish your piece after patinating, reserve the used shot for future patinated pieces; the liver of sulfur residue will contaminate other pieces.) Oil and dirt on the piece can affect the patina, so use a degreasing soap to clean the metal before patinating.

Prepare a liver of sulfur solution according to the manufacturer's instructions. Dip the metal in the solution for a few seconds, then rinse the metal in cool water to stop the chemical reaction. For a darker patina, continue to dip and rinse the metal. Use a brass brush with soapy water to remove or modify the patina. By using different temperatures and amounts of water to make the liver of sulfur solution, you can achieve different colors of patina; experiment to find the result you prefer.

TUMBLE-POLISHING

Sand the metal with progressively finer-grit sandpapers up to 600 grit. Place 1 lb. (454 g) of steel shot into the tumbler's barrel. Pour in water to cover the shot, then add a pinch of burnishing compound. Place your jewelry in the tumbler and seal the barrel. Turn on the tumbler, and let it run for 2–3 hours. Pour the contents of the tumbler into a sieve over a sink, and rinse with cool water. Remove your jewelry and dry it. Dry the shot before storing it.

Tumble-polishing

metal clay techniques

ROLLING METAL CLAY

Metal clay dries rapidly, so remove only the amount you will use during a given work session. Store unused clay in an airtight container with a small piece of moist sponge or paper towel. Cover clay with plastic wrap while you are not working with it. Use a spray bottle to remoisten the clay if it begins to dry out.

Apply olive oil or natural hand balm to your hands, tools, and work surface to prevent the clay from sticking. Decide how thick you want your metal clay sheet to be. Make two stacks of either playing cards, mat board, or thickness guides that equal that thickness. Place your lump of clay on your work surface between the two even stacks. Roll the clay out to a uniform thickness, using an acrylic roller or PVC tube. Rotate the clay 90° and roll it again.

MAKING PASTE AND SLIP

Collect dried, unfired clay scraps and filings, and place them on a glass work surface. Using a tissue blade or razor blade, chop the clay into a fine powder **[1]**. Add some water, and use a plastic or stainless steel palette knife to blend the mixture into a thick paste **[2]**. For a slip consistency, add a little more water, and blend again. Store in a small, airtight container.

wireworking technique

OPENING AND CLOSING JUMP RINGS

Hold the jump ring with two pairs of chainnose pliers **[1]**. To open the jump ring, bring one pair of pliers toward you and push the other pair away from you **[2]**. Reverse the steps to close the jump ring.

enameling technique

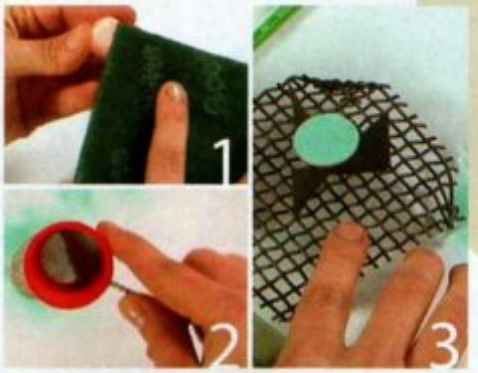
SIFTING ENAMELS

Clean the surface of your metal with a wet Scotch-Brite pad to remove all dirt and oils **[1]**. Handle the metal only by its edges to keep it oil free.

Use a paintbrush or a spray bottle to apply a coat of Klyr-Fire (holding agent) to one side of your metal piece.

Fill a sifter about one-third full with enamel powder. Working while the holding agent is wet, position the sifter above your metal and gently tap the sifter's side to release an even layer of enamel grains onto your piece **[2]**.

Use a spatula to transfer your piece to a trivet **[3]**. Allow the enamel to dry completely before transferring the trivet and its mesh support to the kiln for firing.



toolboxes

online extra

Subscribers, for a printable guide that showcases the contents of these toolboxes, visit www.artjewelrymag.com/toolboxes.

Enamel

- Alundum stones: 150 grit, 220 grit
- Distilled water
- Dust mask
- Enamel sifters
- Fiberglass brush
- Fine-tip paintbrush
- Firing fork
- Heat-resistant gloves
- Kiln, kiln shelf
- Kiln-safe glasses
- Klyr-Fire enameling adhesive
- Mesh firing rack
- Safety goggles
- Scooper
- Scouring pad
- Scribe
- Spatula
- Spray bottle
- Trivet
- Tweezers: regular, bentnose

Finishing

- Brass brush
- Copper tongs
- Files: hand, needle
- Flex shaft or buffing wheel, buffs, polishing compound
- Liver of sulfur or other patina, lidded glass container
- Microcrystalline wax
- Polishing cloth
- Polishing papers
- Sandpaper: various grits
- Scouring pad
- Steel burnisher
- Steel wool
- Tumbler, steel shot, burnishing compound
- Ultrasonic cleaner

Hammering

- Bench block or anvil
- Hammer: ball peen, chasing, cross peen, dead blow, utility
- Mallet: rawhide or plastic

Metal clay

- Acrylic or PVC roller
- Airtight storage container
- Brass brush
- Burnisher
- Clear, hard plastic sheet
- Craft knife
- Drinking straw
- Fine-tip paintbrush
- Flexible Teflon sheet
- Kiln, kiln shelf
- Mug warmer
- Needle files
- Needle tool
- Olive oil or natural hand balm
- Pin vise or holder, drill bits
- Plastic wrap
- Playing cards or thickness gauge
- Rubber block
- Shape cutters
- Smoothing tool
- Spatula or palette knife
- Syringe
- Texture sheets or molds
- Tissue blade (flexible, rigid, or wavy)
- Tumbler, steel shot, burnishing compound
- Vermiculite, kiln-safe container
- Water (distilled)
- Wet/dry sandpaper: various grits, or nail buff/emery board

Sawing/piercing

- Adhesive bandages
- Alligator tape (optional)
- Bench pin
- Center punch: manual or automatic
- Dividers
- Files: hand or needle
- Flex shaft, drill bits
- Jeweler's saw frame, saw blades
- Lubricant or beeswax
- Rubber cement or glue stick
- Safety glasses

Soldering

- Anti-flux
- Binding wire
- Borax (for borax solution)
- Copper tongs
- Fire-resistant surface (soldering pad, firebrick, or charcoal block)
- Flux, flux brush
- Pickle pot with pickle
- Solder (hard, medium, and easy)
- Soldering pick
- Sparker: manual or automatic
- Third hand, insulated cross-locking tweezers
- Torch, various tips

Wirework

- Bench block or anvil
- Cutters: side, end, or flush
- Hammers: chasing, ball peen, cross peen
- Mallet: rawhide or plastic
- Mandrels or dowels
- Needle files
- Pliers: chainnose, flatnose, roundnose, parallel, nylon jaw
- Polishing cloth
- Sandpaper: various grits
- Tumbler, steel shot, burnishing compound

safety basics

Metal clay

- Use your kiln in a well-ventilated area to sinter clay.
- All tools should be dedicated for nonfood use.
- Follow manufacturers' instructions for programming your kiln and sintering times and temperatures.
- Do not torch-fire metal clay pieces that have a core inclusion, such as cork or wood clay.
- Do not sinter or torch-fire metal clay pieces that are not completely dry, as they may explode.

Enamel

- Wear a dust mask.
- Do not touch your eyes, nose, mouth, or other sensitive areas.
- Wear fire-retardant gloves or mitts when loading and unloading the kiln.
- Follow manufacturers' instructions for operating your kiln.
- When using a fiberglass brush, brush surface underwater and avoid skin contact.
- Use an alundum stone underwater.
- Consult your local hazardous-waste center for proper glass disposal methods.

Metals

- Wear eye protection at all times while working with metals, wire, and metalsmithing tools.
- Wear a non-flammable apron to protect your clothing.
- Tie back long hair.
- Work in a well-ventilated area at all times.
- Wear close-toed shoes.
- Do not wear clothing or jewelry that might get caught in machinery or catch fire.

All media

- Wear a dust mask while working with materials and tools that generate particulates.
- Read all Material Safety Data Sheets (MSDSs) before using a new material, and keep a copy of the MSDS for any material you use.
- Do not use tools or chemicals in ways that are contrary to the manufacturer's intended purpose.
- Wear protective gloves while handling caustic materials or chemicals.
- Keep a properly rated fire extinguisher and a source of clean water near your workstation.
- Keep cutting tools sharp and all tools and equipment properly maintained.

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Above L to R: Dots Collar by Danielle Goni-Morrarelli, Raven by James Mullan
Below L to R: Glass by Pablo Soto, Pendant by Jacob Alsen

contacts & suppliers

where to find it

contacts

When contacting artists and writers via e-mail, please put *"Art Jewelry"* in the subject line.

ARTIST PROFILE

pages 42–44

- Judith Kinghorn: www.judithkinghorn.com

GALLERY

pages 45–49

- Jill K. Baker Gower: www.jillbakergower.com
- Martha Collins: www.studiomarthacollins.com
- Jeffrey Lloyd Dever: jeff@deverdesigns.com
- Lynn M. Floriano: floriboer@aol.com
- Janice P. Ho: www.janiceho.com
- James Kaya: www.jameskaya.com
- Victoria Lansford: www.victorialansford.com
- Kristin Lora: www.kristinlora.com
- Michael Michaud: www.fourseasons designgroup.com
- Cindy Miller: www.cindymiller.com
- Holly T. Stein: www.hollystein.net
- Sadie Shuping Wang: www.sadiewang.com

BEYOND JEWELRY

page 82

- J. Malcolm Owen and Mary Ann Spavins Owen: www.wingedcamel.com

suppliers

SCRIBBLE INTO ENAMELS — SGRAFFITO REVEALED

pages 32–38

- Enamels, enameling supplies (Thompson Enamel, *above right*; Schlaifer's Enameling Supplies, 800.525.5959, www.enameling.com)
- Metal sheet, tubing (Rio Grande, *above right*)

WHEN GOOD ENAMELING GOES BAD

pages 39–41

- Sheet mica (Thomspon Enamels, *above right*)
- Burnisher, tumbler, steel shot; steel wire brush (Rio Grande, *above right*)

general suppliers

- **Art Clay World, USA:** 866.381.0100, www.artclayworld.com
- **Precious Metal Clay (PMC):** www.pmcguild.com for a list of suppliers
- **Rio Grande:** 800.545.6566, www.riogrande.com
- **Thompson Enamel:** 800.545.2776, www.thompsonenamel.com

WHIP UP LATCH-BACK EARRINGS IN 30 MINUTES OR LESS

pages 50–53

- Sterling silver sheet, wire, precut disks (Santa Fe Jewelers Supply, 800.659.3835, www.sfjssantafe.com)
- Hole-punch pliers (Rio Grande, *above*)
- Textured silver disks with holes, small metal beads (The Earth Bazaar, 866.424.5149, www.theearthbazaar.com)

LEARN SECRETS OF MASTERFUL WIRE WRAPPING

pages 54–60

- Coin pearls (BeadsOnSale.com, 201.967.0209, www.beadsonsale.com; JewelrySupply.com, 866.380.7464, www.jewelrysupply.com)
- Silver beads, sterling silver wire, chain (FineDings.com, www.finedings.com)

WEAVE A SIMPLE, SOLDER-FREE CUFF

pages 61–64

- #70 (0.7 mm) drill bit, #3 jeweler's saw blades, Zam polishing compound, liver of sulfur or Jax Silver Blackener, agate or steel burnisher (Rio Grande, *above*)
- Patterned silver sheet (style P153 Chinese Spirals) (David H. Fell & Co. Inc., 800.822.1996, www.dhfco.com)
- Bracelet bender (Grey Owl Crafts, 800.487.2376, www.greyowlcrafts.com)

MIX IT UP — METAL CLAY MEETS METAL SHEET

pages 65–69

- Metal clay, metal clay paste (various suppliers, *above*)
- Metal sheet, disk cutter, dapping block and punches (Rio Grande, *above*)
- Paste solder (Progress Machine & Tool Corp., 800.841.8665, www.progresstool.com; Star Gems Inc., 800.882.8750, www.silversupplies.com)

BEYOND

Jewelry

Building Assets

Usually a finished object begs for just the right title. But every once in a while it's the other way around, and the perfect name is what inspires a piece. This bank began as such a name. **Mary Ann Spavins Owen**, who has always had an interest in architecture, was working with a block theme to create functional metal objects. When she and her partner, **J. Malcolm Owen**, came up with the title "*Building Assets*," they cleverly developed the idea into a block-themed bank.

This husband-and-wife team has been in business as Winged Camel Metalworks since 1979, designing and hand fabricating sculptural metal objects and jewelry. Although they independently create one-of-a-kind works, most of the pieces they make are collaborative efforts; Mary Ann creates the theme and layout of the pieces, and Malcolm works on the mechanical aspects of production. Malcolm is a lover of quality tools — he's made many of the stakes and hammers that the pair use daily. —*AK*

▲ **The real coins featured on *Money Maker*, a smaller bank by the Owens, demonstrate just how tiny their sterling silver figures are.**

▶ ***Building Assets*** **coin bank. Copper, brass, and figures cast in sterling silver. 3 x 5 x 2½ in. (76 x 127 x 64 mm).** Photos by Mary Ann Spavins Owen.

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